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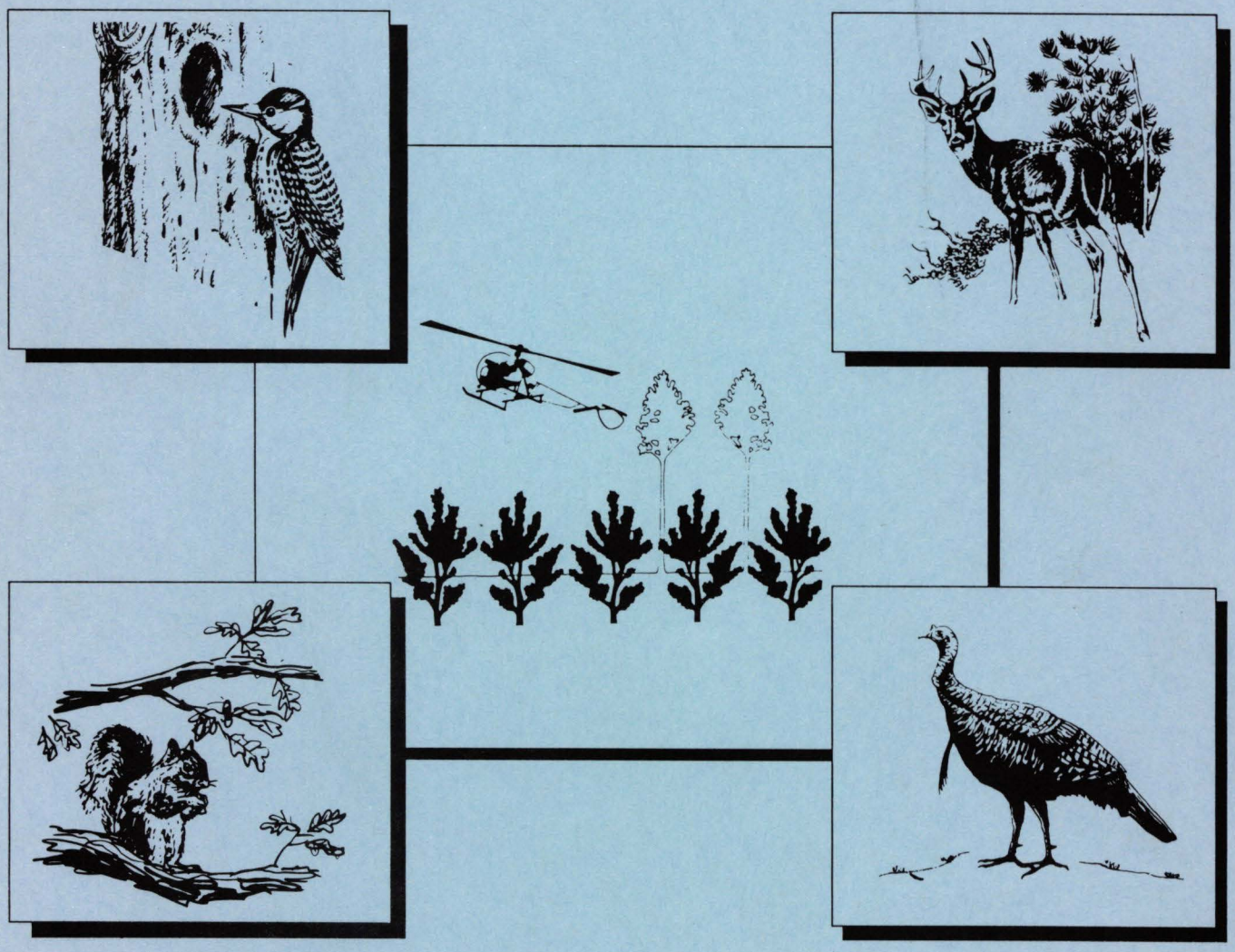
Herbicides and Wildlife Habitat

An Annotated Bibliography on the Effects of Herbicides on Wildlife Habitat and their uses in Habitat Management



HERBICIDES AND WILDLIFE HABITAT

An Annotated Bibliography on the Effects of Herbicides on Wildlife Habitat and their Uses in Habitat Management

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HERBICIDES AND WILDLIFE HABITAT

An annotated bibliography on the effects of herbicides on wildlife habitat and their uses in habitat management

Vegetation control with herbicides is a common practice in forest, range, and right-of-way management throughout the United States. Herbicide use has increased in the past decade for several reasons:

1. increased availability of more selective and environmentally compatible chemicals,
2. rising costs of alternative vegetation control methods such as mechanical site preparation,
3. lack of labor to conduct manual vegetation control, and
4. recognition that herbaceous and woody plant competition reduces early growth of newly established plantations.

Structure and composition of vegetation are primary factors governing the distribution and abundance of wildlife. Species richness and composition are related to the vertical and horizontal diversity of vegetation. Various classes of herbicides affect plant species composition differently resulting in varied responses of wildlife to herbicide-induced habitat changes. The effects of herbicidal vegetation management may be positive or negative, depending on the particular wildlife species and its habitat requirements. Sound management decisions with considerations for wildlife require that vegetation managers have adequate information on herbicide/habitat interactions for each wildlife species.

This annotated bibliography is a compilation of published reports on the effects of herbicides on wildlife habitat. The use of herbicides in wildlife habitat management is also included. This compilation will aid managers in determining the wildlife implications of vegetation management activities on wildlife species and also assist researchers in identifying research needs.

Geographically, this bibliography covers the continental United States and Canada. A few pertinent publications from other geographic regions have been included.

Annotations consist of abstracts, conclusions, or summaries from the original reference. In some instances, comments indicating specific herbicides used or wildlife species affected have been inserted. All comments or additions not appearing in the original report have been placed in brackets [ ]. Publications without abstracts, conclusions, or summaries are abstracted by the senior author (KVM). In some instances the original abstracts or summaries have been abbreviated. Deleted portions are indicated by a series of three dots (...). Do not cite information from the abstracts; always refer to the original source.

References are indexed by author, wildlife species, plant species, primary land use, and herbicide. An appendix listing approved common names and product names of herbicides mentioned in this bibliography also has been included.

The authors thank Yvette C. Berisford for her editorial comments on earlier drafts of this document.

In addition to this printed version, this bibliography is also available as an ASCII text file on either 5.25" or 3.5" disks. Requests for disks should be sent to:

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TABLE OF CONTENTS

Introduction -- i

Bibliography -- 1

Addendum -- 120

Author Index -- 130

Wildlife Species Index - 137

Plant Species Index -- 139

Primary Land Use Index -- 143

Herbicide Index -- 144

Appendix I -- 148

Citation Number 1
AUTHOR: Allen, D. L.
TITLE: Wildlife habitat in relation to the use of herbicide sprays on farms, ranches, and roadsides.
SOURCE: International Association of Game, Fish and Conservation Commissions.
VOLUME: 43
PAGE(S): 90-94
YEAR: 1954

The relationship of herbicide techniques to the preservation and improvement of wildlife habitats is a field which we have only begun to explore. Widespread intensive use of the land is so far ahead of our wildlife management knowledge that the verdict is quite likely to be too little too late. If we are interested in having game and other creatures considered in large herbicide operations, it is time now to get busy and develop a basis of workable techniques on which realistic recommendations can be made. [Recommendations for mitigating the wildlife impacts of vegetative management with herbicides and examples of the use of herbicides to improve wildlife habitat are provided.]

(Author's conclusions)

Citation Number 2
AUTHOR: Amman, G. A.
TITLE: Status and management of sharp-tailed grouse in Michigan.
SOURCE: Journal of Wildlife Management.
VOLUME: 27
PAGE(S): 802-809
YEAR: 1963

Sharp-tailed grouse (Pedioecetes phasianellus) have decreased at least 9 percent in the Upper Peninsula of Michigan since 1956, largely a reflection of the loss of habitat. ... Positive management measures on sharptails totaled 6,953 acres purposely burned and 10,849 acres sprayed with herbicide. Spraying or a combination of burning and spraying, where feasible, is the most practical measure for controlling woody cover. Sixteen-, 17-, and 18-year histories of sharptail populations on several areas that were repeatedly treated by burning and spraying showed varying responses by the sharptails but proved that sharptail populations can at least be maintained by intensive management-at a price. In the future, sharptails will very likely be restricted to a few productive and intensively managed areas.

(Author's abstract)

Citation Number 3
AUTHOR: Anderson, A. E.
TITLE: 2,4-D, sagebrush, and mule deer - cattle use of upper winter range.
SOURCE: Colorado Division of Game, Fish and Parks, Special Report.
VOLUME: 21
PAGE(S): 21
YEAR: 1969

Eight, disjunct, sagebrush (Artemisia tridentata spp.) communities totaling 731 acres ... were aerially sprayed with 2,4-D. ... Mean, air-dry sagebrush forage yields were reduced [on both completely and partially sprayed areas]. Percent frequencies of grass and grasslike genera nearly doubled for all sagebrush thus treated. All forbs...were reduced in percent frequency. The accidental loss of control areas, other habitat modification adjacent to the sampled area, and several unmeasured but pertinent variables permit only tentative interpretation of the changes described [in deer and cattle use] as being causally related to 2,4-D treatment.

(Author's abstract)

Citation Number 4
AUTHOR: Anthony, R. G. and M. L. Morrison.
TITLE: Influence of glyphosate herbicide on small mammal populations in western Oregon.
SOURCE: Northwest Science.
VOLUME: 59
PAGE(S): 159-168
YEAR: 1985

The effect of glyphosate application on vegetation and small mammal populations in the Coast Range of western Oregon was investigated. Diversity, abundance, and biomass of small-mammal populations increased one year post-spray on glyphosate-treated sites as compared to control sites. These changes were ephemeral and the above parameters were similar to pre-spray values two years after glyphosate application. The changes in diversity, abundance, and biomass were primarily a result of the increase in numbers of Microtus oregoni following an increase in grass and forb cover on treated grids one year post-spray. The temporary effects of glyphosate treatment on vegetation had no detrimental effects on small mammal populations.

(Authors' abstract)

Citation Number 5
AUTHOR: Arner, D. H.
TITLE: Effects of rights of way techniques on vegetation.
SOURCE: Transactions of the North American Wildlife Conference.
VOLUME: 25
PAGE(S): 378-386
YEAR: 1960

[Right-of-way vegetation management by spraying with 2,4-D or 2,4,5-T, hand-cutting, mechanical cutting, or bulldozing all failed to fill the important requirements for deer and turkey of a palatable, nutritious early spring green. Various techniques of vegetation management and seeding were tested to find techniques that would retard the invasion of woody plants and provide highly nutritious foods for wildlife.] A greater amount of nutritious wildlife food can be produced and a more economical reduction of woody vegetation can be obtained through the use of mechanical equipment or controlled burning when these treatments are combined with the application of fertilizer and seed, than any other technique now in current use. Before selecting the techniques to be used in right of way management, topographic conditions, types, and quantity of vegetation present, width of right of way, and the landowners' desires will all have to be taken into consideration.

(KVM abstract)

Citation Number 6
AUTHOR: Arner, D.H.
TITLE: Utility line right-of-way management.
SOURCE: Transactions of North American Wildlife and Natural Resource Conference.
VOLUME: 31
PAGE(S): 259-268
YEAR: 1966

Cooperative work between the Maryland Game Commission and a power company was initiated in 1948 and cooperative planning was started in Alabama in 1958. Information gleaned from these projects has pointed the way for reduced right-of-way maintenance costs as well as reduced costs for establishment of feeding areas for forest game species. The technique of spraying with herbicides is strongly entrenched in maintenance work of utility companies. [Seeding recommendations, maintenance schedules, and cost estimates are provided.]

(KVM abstract)

Citation Number 7
AUTHOR: Ball, E. W.
TITLE: Aerial treatment of pest plants with herbicides on national wildlife refuges in the Southeast.
SOURCE: Proceedings of the Annual Conference of the Southeast Association of Game and Fish Commissioners.
VOLUME: 13
PAGE(S): 259-267
YEAR: 1959

[This paper summarizes the results of herbicides applied by aircraft to several pest plants in freshwater waterfowl impoundments on several National Wildlife Refuges in the Southeast. Plants sprayed include Typha spp., Sesbania macrocarpa, Nelumbo pentapetala, Raphanus spp., Alternanthera philoxeroides, Juncus roemerianus, Eichornia crassipes, Jussiaea grandiflora, Nymphaea odorata, Sagittaria lancifolia, Panicum hemitomon, Melochia corchorifolia, Nuphar advena, Zizaniopsis miliacea, Jussiaea diffusa, Salix spp., Myrica serifera, Baccharis halimifolia, and Borrichia frutescens. Treatements included 2,4-D, dalapon, amitrol, and silvex. Treatment times are provided.]
(KVM abstract)

Citation Number 8
AUTHOR: Ball, E.W.
TITLE: Results in applying dalapon by aircraft to pest plants in waterfowl areas of the Southeast.
SOURCE: Down-To-Earth.
VOLUME: 14
PAGE(S): 11-14
YEAR: 1958

[Between 1954 and 1956, 136 acres of Typha spp., 16 acres of Panicum hemitomon, and 6 acres of Zizaniopsis miliacea were treated with an aerial application of dalapon. Treatment areas included St. Marks, Loxahatchee, Savannah, Mattamuskeet, and Pea Island National Wildlife Refuges.] Results of these experiments indicated that dalapon applied by aircraft shows definite promise in controlling two of these species with some indication the third species might be controlled under modified conditions.
(KVM abstract)

Citation Number 9
AUTHOR: Barrons, K. C.
TITLE: Some ecological benefits of woody plant control with herbicides.
SOURCE: Science.
VOLUME: 165
PAGE(S): 465-468
YEAR: 1969

[The ecological effects of 2,4-D, 2,4,5-T, silvex, and Tordon are reviewed. The research of Bramble and Byrnes (1967) is discussed. The author concludes that selective herbicides have given man new tools which have certain ecological as well as economic advantages.]
(KVM abstract)

Citation Number 10
AUTHOR: Barrons, K. C.
TITLE: Some environmental benefits of herbicides.
SOURCE: Down-To-Earth.
VOLUME: 29
PAGE(S): 30-32
YEAR: 1973

In addition to the economic values, there are a number of environmental benefits associated with the use of herbicides which are seldom considered. In a number of instances, herbicides have proven useful for the selective inhibition of plants that are, in one way or another, undesirable components of a habitat favorable for the wildlife species of interest. [Several references on the beneficial effects of herbicides on various wildlife species are provided.]

(KVM abstract)

Citation Number 11
AUTHOR: Beasom, S. L., C. J. Scifres and M. Brownfield.
TITLE: Reaction of white-tailed deer populations to aerial applications of herbicides in the South Texas mixed brush.
SOURCE: Rangeland Resources Research: Consolidated Progress Report 1971-1974, PR-3
VOLUME: 351
PAGE(S): 51
YEAR: 1975

Aerial spraying 80% of a mature honey mesquite brushland in alternating strips with 2,4,5-T + picloram (1:1) at 1.12 kg/ha did not adversely affect populations of white-tailed deer. Deer populations on the Treatment 1 Area (80% spray) did not change significantly throughout the counting period. On the Treatment 2 Area (total spray) deer density was reduced by more than 50% by August of the year following treatment. These data indicate that it is possible to aerially spray as much as 80% of mature mesquite brushland [in alternating strips] with no adverse effects on white-tailed deer populations. Important factors to consider in addition to amount of brush treated, however, are pattern, timing, effectiveness, and type of control treatment administered. Sprayed strips wider than those used in this study [550-600 ft separated by 100 ft untreated strips] might have had a detrimental effect on the deer. Conversely, there might have been a beneficial effect if more, narrower strips had been used.

(KVM abstract)

Citation Number 12
AUTHOR: Beasom, S. L. and C. J. Scifres.
TITLE: Population reactions of selected game species to aerial herbicide applications.
SOURCE: Journal of Range Management.
VOLUME: 30
PAGE(S): 138-142
YEAR: 1977

Aerial spraying 80% of a mature honey mesquite brushland in alternating strips with 2,4,5-T + picloram (1:1) at 1.12 kg/ha did not adversely affect populations of white-tailed deer, nilgai antelope, wild turkeys, or feral hogs. Complete treatment (100% sprayed) apparently exceeded the threshold of suitability for all game species surveyed except nilgai antelope. White-tailed deer densities were inversely correlated with production and species diversity of forb populations following aerial spraying. With restoration of the forbs at 27 months after treatment, there were no differences among treatments in deer numbers. Javelina populations, apparently as a result of controlling pricklypear, were significantly reduced by both spray treatments. Reductions in javelina densities were apparent at the final census, 27 months after herbicide application.
(Authors' abstract)

Citation Number 13
AUTHOR: Beaver, D. L.
TITLE: Avian populations in herbicide treated brush fields.
SOURCE: Auk.
VOLUME: 93
PAGE(S): 543-553
YEAR: 1976

[Avian populations in 2 areas of a brush field in Nevada County, California were compared before and after herbicide treatment (2,4,5-T @ 0.72, Plot 1, or 0.54 kg/ha, Plot 2).] The relative abundance of certain species was noted to change between pre- and post-spray periods on both plots. No effect of herbicide treatment was discernible on avian species composition, population size, or relative abundance on Plot 1 with 2-year post-spray nor on Plot 2 1-year post-spray. In this study, changes in food type and abundance on herbicide sprayed plots resulted in no noticeable short-term population changes.
(KVM abstract)

Citation Number 14
AUTHOR: Beck, R.
TITLE: Herbicides increase game foods and edge in solid stands of phragmites.
SOURCE: Down-To-Earth.
VOLUME: 12
PAGE(S): 2-3
YEAR: 1957

Radapon application to control phragmites yielded a bonus in increasing game food and cover. Plants which followed the phragmites proved to be of high value to game and their numbers increased markedly. Seeding desirable plants after phragmites control proved unnecessary because of the abundance of food-producing plants which volunteered on the land.
(Editor's abstract)

Citation Number 15
AUTHOR: Beck, R. A.
TITLE: Phragmites control for urban, industrial, and wildlife needs.
SOURCE: Proceedings of the Northeast Weed Science Society.
VOLUME: 25
PAGE(S): 89-90
YEAR: 1971

[The creation of edge and interspersion in solid stands of phragmites can be a major means of improving habitat for wildlife as well as preventing damage from fires. Treatment depends on the wetness of the site and the maturity stage of the plant. Effective rates of amitrole-T, dalapon, amitrole-T + dalapon, and erbon are provided for dry, dry-wet, and flooded/tidal areas.]
(KVM abstract)

Citation Number 16
AUTHOR: Beeman, L. and R. K. Schreiber.
TITLE: A partial bibliography - environmental concerns in rights-of-way management.
SOURCE: In: R.E. Tillman (ed.). Proceedings of the First National Symposium, Environmental Concerns in Rights-of-way Management. Mississippi State University
VOLUME:
PAGE(S): 321-335
YEAR: 1976

[A list of references pertaining to both direct and indirect ecological impacts associated with rights-of-way construction and maintenance is provided. References are arranged into general impacts, right-of-way construction and vegetation management, impacts on wildlife (terrestrial and aquatic), and biological effects.]
(KVM abstract)

Citation Number 17
AUTHOR: Bellrose, F. C.
TITLE: The control of aquatic weeds in waterfowl habitats.
SOURCE: Proceedings of the North Central Weed Control Conference.
VOLUME: 13
PAGE(S): 26
YEAR: 1956

The aerial application of herbicides appears to be a feasible method of controlling some of the undesirable plants in waterfowl habitats in Illinois. Highly satisfactory results were obtained in using 2,4-D to control American lotus (Nelumbo lutea), white-water lily (Nymphaea advena), and black-willow (Salix nigra), and possibly buttonbush (Cephalanthus occidentalis). The aerial application of radapon on cattail beds did not effect a complete kill [probably due to incomplete coverage. Reduction of undesirables resulted in rapid reinvasion of desirable duck food plants such as coontail (Cerataphyllum demersum), rice cut-grass (Leersia oryzoides) and duck potato (Sagittaria latifolia).]

(KVM abstract)

Citation Number 18
AUTHOR: Besadny, C. D., C. Kabat and A. J. Rusch.
TITLE: Practical aspects of a selective brush management program on Wisconsin roadsides.
SOURCE: Transactions of the North American Wildlife and Natural Resources Conference.
VOLUME: 33
PAGE(S): 236-249
YEAR: 1968

A selective brush management program was designed to increase the esthetic quality of the country road, make management of roadside rights-of-way easier, help reduce soil erosion, and provide wildlife food and cover. [Treatments consisted of combinations of selective cutting and selective spraying with 2,4-D or 2,4,5-T to retain existing low-growing shrubs and remove trees and other undesirable vegetation. Although no intensive efforts have been made to evaluate the effects of the program on wildlife, observations indicate heavy use of the managed hedgerows by songbirds, rabbits, and pollinating insects. Some use by pheasants, especially for winter cover, was recorded.]

(KVM abstract)

Citation Number 19
AUTHOR: Best, L. B.
TITLE: First-year effects of sagebrush control on two sparrows.
SOURCE: Journal of Wildlife Management.
VOLUME: 36
PAGE(S): 534-544
YEAR: 1972

This study, conducted in central Montana during the summers of 1968 and 1969, was designed to examine effects of sagebrush (Artemisia tridentata) control on two nongame birds: Brewer's sparrows (Spizella breweri) and vesper sparrows (Pooecetes gramineus). Plots were...subjected to five treatments: total kill spray, strip spray, partial kill spray, defer control, and open control. Plots were sprayed with 2,4-D in late June 1968... Only on the total kill spray plot did breeding pairs of Brewer's sparrows notably decline (54%) after spraying. No significant change occurred in pairs of vesper sparrows... Plant foods (primarily grass seeds) represented a greater portion of the diets of both sparrows on the sprayed area than on the unsprayed area. ... As a result of spraying, major plant and animal foods that were consumed differed in amount rather than in variety. Dependence upon sagebrush for nest cover will be a major factor determining the ultimate effects of sagebrush control on Brewer's and vesper sparrows.

(Author's abstract)

Citation Number 20
AUTHOR: Blake, P. M.
TITLE: Diversity, biomass, and deer forage in banded versus broadcast hexazinone in a loblolly pine plantation.
SOURCE: Proceedings of the Southern Weed Science Society.
VOLUME: 39
PAGE(S): 404
YEAR: 1986

The effect of the application of hexazinone to control herbaceous competition in newly established loblolly pine (Pinus taeda) plantations on deer forage was investigated. A flatwoods site in Oktibbeha Co., Miss. received either Velpar L @ 1.12 kg ai/ha, Pronone 5G @ 1.12 kg ai/ha or were left untreated. No significant differences between the two application methods were observed in total biomass at the end of the first growing season or in summer and winter deer forage. Controls differed significantly ($P = 0.10$) from treatments in the first growing season. In the second growing season there was no significant difference between any of the treatments.

(KVM abstract)

Citation Number 21
AUTHOR: Borrecco, J. E., H. C. Black, and E. F. Hooven.
TITLE: Response of black-tailed deer to herbicide-induced habitat changes.
SOURCE: Proceedings of the Annual Conference, Western Association of State Game and Fish Commissioners.
VOLUME: 52
PAGE(S): 437-451
YEAR: 1972

... Half of [three areas in western Oregon] was treated with a combination of herbicides, principally Atrazine and 2,4-D, to control herbaceous vegetation. Small mammals were live-trapped, deer pellets counted, browsing damage to Douglas-fir observed, and vegetation analyzed on both treated and untreated areas. ... The most important results were a reduction in number of species, chiefly grasses and forbs, and in ground cover on treated areas. ... Trapping before and after treatment showed no acute effects to small mammal populations. With effective control of vegetation, however, the abundance and relative species composition of small-mammal populations were altered. Responses to changes in vegetation depend on habitat preferences. ... Significantly more [deer] pellet groups were counted on treated plots during the growing season than on untreated plots. ...

(Authors' abstract)

Citation Number 22
AUTHOR: Borrecco, J. E.
TITLE: The response of animals to herbicide-induced habitat changes.
SOURCE: M.S. Thesis. Oregon State University, Corvallis.
PAGE(S): 92
YEAR: 1973

See Borrecco et al. (1972).

Citation Number 23
AUTHOR: Borrecco, J. E., H. C. Black and E. F. Hooven.
TITLE: Response of small mammals to herbicide induced habitat changes.
SOURCE: Northwest Science.
VOLUME: 53
PAGE(S): 97-106
YEAR: 1979

Halves of three clearcuttings in western Oregon were treated in the springs of 1970 and 1971 with a combination of herbicides, principally atrazine and 2,4-D, to control herbaceous vegetation. ... Herbicide treatments reduced the numbers of plant species, chiefly grasses and forbs, and ground cover. ... Microtus oregoni, Peromyscus maniculatus, Sorex vagrans, Sorex trowbridgii, and Zapus trinotatus - comprising 95% of the total small mammal community - were abundant enough for meaningful evaluation. Mark-recapture data showed that the kinds and numbers of small mammals were similar between the sides of each designated area before treatment. However, effective control of herbaceous vegetation altered the species composition of small mammal communities as they responded according to their habitat preferences. Species preferring grassy habitats were less abundant on treated than untreated plots.
(Authors' abstract)

Citation Number 24
AUTHOR: Bovey, R. W. and J. D. Diaz-Colon.
TITLE: Selected bibliography of the phenoxy herbicides. IV. Ecological effects.
SOURCE: Texas Agricultural Experiment Station, Miscellaneous Paper.
VOLUME: 1360
PAGE(S): 28
YEAR: 1978

[In this bibliography, the authors provide some of the more pertinent references to phenoxy herbicide use and environmental effects. Citations for 196 references are provided and are indexed by herbicide and the type of ecosystem affected. Herbicides listed include: 2,4-D, MCPA, MCPB, mecoprop, 2,4,5-T, and silvex.]
(KVM abstract)

Citation Number 25
AUTHOR: Bramble, W. C. and W. R. Byrnes.
TITLE: Effect of certain common brush control techniques and materials on game food and cover on a power line right-of-way, No. 1.
SOURCE: Pennsylvania Agricultural Experiment Station, Progress Report.
VOLUME: 126
PAGE(S): 4
YEAR: 1955

A replicated series of treatments have been set up on a 3-mile section of a powerline right-of-way designed to compare the effects of the spray application on game food and cover of an upland oak-hickory forest cover type. These treatments include a summer foliage spray with 2,4-D + 2,4,5-T, a foliage spray with Ammate, a summer basal spray with D + T in oil and in oil-water carriers, and a selective winter basal spray with 2,4,5-T. A uniform plant community has been described covering the right-of-way at the time of spraying. All sprays caused a foliage kill of from 80 to 100%, but stem kill vaired. The highest percent of stem kill was obtained from the summer and winter basal sprays with the highest number of seedlings and single sprouts being missed in the winter applications. (Authors' summary)

Citation Number 26
AUTHOR: Bramble, W. C., W. R. Byrnes and D. P. Worley.
TITLE: Effects of certain common brush control techniques and materials on game food and cover on a power line right-of-way, No. 3.
SOURCE: Pennsylvania Agricultural Experiment Station, Progress Report.
VOLUME: 151
PAGE(S): 7
YEAR: 1956

[Results after 3 years of the study described by Bramble and Byrnes (1955) indicate that improved game food conditions have resulted from all treatments.] Highly valued shrubs such as blueberries and teaberries were present in large numbers only in the basal spray treatments. In the broadcast spray areas a grasslike or herbaceous community dominated, and while these are attractive to certain forms of wildlife, important shrubs were sparse or absent. Common game species of the region continued to use all treatment areas during the third year after spraying, indicating that these areas were making an important contribution towards the maintenance of the game population. (Authors' summary)

Citation Number 27
AUTHOR: Bramble, W. C. W. R. Byrnes and D. P. Worley.
TITLE: Effects of certain common brush control techniques and materials on game food and cover on a power line right-of-way, No. 4.
SOURCE: Pennsylvania Agricultural Experiment Station, Progress Report.
VOLUME: 175
PAGE(S): 4
YEAR: 1956

[Results after 4 years of the study described by Bramble and Byrnes (1955) indicate that] by use of basal sprays a stable ground cover can be maintained with minimum disturbance. Such cover has proven useful to several important game species. On the other hand, broadcast spraying resulted in drastic alterations of the low plant cover which has been slowly progressing towards a more stable condition. The broadcast spray areas are used by several important wildlife species. ...

(Authors' summary)

Citation Number 28
AUTHOR: Bramble, W. C., W. R. Byrnes and R. J. Hutnik.
TITLE: Effects of chemical brush control upon game food and cover.
SOURCE: Pennsylvania Agricultural Experiment Station, Progress Report.
VOLUME: 188
PAGE(S): 7
YEAR: 1958

[Results after 5 years of the study described by Bramble and Byrnes (1955) indicate that] considerable disturbance of plant cover, both in amount and kind, followed broadcast and semi-basal techniques. Fireweed became prominent for several years after which the plant community developed toward its original composition. Blueberry which was practically eliminated by broadcast sprays remained sparse. The selective basal techniques maintained the original plant community as a low cover. ... The development of edges and type interspersion through cutting of the right-of-way and elimination of woody brush on it has favored such species as turkey and rabbits. Deer use the sprayed areas heavily in the spring and summer while grouse appear to prefer the wooded edges.

(Authors' summary)

Citation Number 29
AUTHOR: Bramble, W. C.
TITLE: Game food and cover produced during seven years of chemical brush control.
SOURCE: Proceedings of the Southern Weed Control Conference.
VOLUME: 15
PAGE(S): 16-26
YEAR: 1962

Seven years of observations have been made on the effects of chemical sprays [2,4-D, 2,4,5-T, ammate] upon game habitat on a powerline right-of-way. ... The type of plant cover produced has differed markedly with the technique used. Broadcast sprays created considerable disturbance as compared with selective basals which maintained a tight cover. ... Broadcast sprays caused a marked secondary succession including creation of such temporary communities as a fireweed stage and elimination of important low woody plants such as blueberries and huckleberries. In all cases there has been a gradual development towards a stable shrub community of bracken, sedge, mixed herbs and woody shrubs. ... All sprays created cover type interspersion on the plateau and produced food and cover used by common game species present, which included deer, rabbits, grouse, turkey and grey squirrels,

(Author's abstract)

Citation Number 30
AUTHOR: Bramble, W. C. and W. R. Byrnes.
TITLE: Ecological aspects of brush control - A long term study on a utility right-of-way.
SOURCE: Purdue Agricultural Experiment Station Research Bulletin.
VOLUME: 835
PAGE(S): 12
YEAR: 1967

[The study described by Bramble and Byrnes (1955) was continued with a reapplication of treatments in 1966. Use patterns of the different treatment areas by deer, grouse, turkey, squirrel, and rabbits are described. This is the same paper as Bramble and Byrnes 1967.]

(KVM abstract)

Citation Number 31
AUTHOR: Bramble, W. C. and W. R. Byrnes.
TITLE: Ecological aspects of brush control - a long term study on a Pennsylvania right-of-way.
SOURCE: Proceedings of the Northeast Weed Control Conference.
VOLUME: 21
PAGE(S): 406-412
YEAR: 1967

[The study described by Bramble and Byrnes (1955) was continued with a reapplication of treatments in 1966. Use patterns of the different treatment areas by deer, grouse, turkey, squirrel, and rabbits are described.]

(KVM abstract)

Citation Number 32
AUTHOR: Bramble, W. C.
TITLE: Do herbicides affect game?
SOURCE: Pennsylvania Game News.
VOLUME: 39
PAGE(S): 26-29
YEAR: 1968

[The 13 year-old study initiated by Bramble and Byrnes (1955) is described and the effects of the various treatments on game species is discussed.] The study has clearly revealed that game has flourished and increased in the area, and even that species such as rabbits, which are not common in the forest, have moved in, increasing the species of game in a given plot under scrutiny.
(KVM abstract)

Citation Number 33
AUTHOR: Bramble, W. C. and W. R. Byrnes.
TITLE: Fifteen years of ecological research on a utility right-of-way.
SOURCE: Proceedings of the Northeast Weed Control Conference.
VOLUME: 23
PAGE(S): 270-278
YEAR: 1969

[The study described by Bramble and Byrnes (1955, 1967a, b) was evaluated 15 years after the initial treatment with particular attention to deer forage availability and use. Herbaceous species such as bracken, goldenrod, loosestrife, and aster were eaten commonly and were sparse or lacking in the adjacent forest. Woody plants such as sweet-fern, sassafras, bear oak, and witch-hazel, were also commonly utilized.]
(KVM abstract)

Citation Number 34
AUTHOR: Bramble, W. C. and W. R. Byrnes.
TITLE: A long-term ecological study of game and cover on a sprayed utility right-of-way.
SOURCE: Purdue University Agricultural Experiment Station, Research Bulletin.
VOLUME: 885
PAGE(S): 20
YEAR: 1972

Herbicide treatments applied in 1953 were highly effective in controlling woody brush of mixed upland oak species on a utility right-of-way. ... A stable low plant cover ... persisted on unsprayed control areas throughout the 19-year study period. Species such as bracken, sedge, loosestrife, and blueberry were continuously present. ... In contrast, broadcast sprays (reduced) low plant cover to 10% during the first year after application and caused changes in floristic composition to fireweed and sedge-grass communities. ... A diversity of food plants useful to wildlife developed on the right-of-way following spraying. ... The right-of-way was heavily used by common wildlife species such as white-tailed deer, rabbit, grouse, and wild turkey.
(Authors' summary)

Citation Number 35
AUTHOR: Bramble, W. C.
TITLE: Songbirds on the right-ofway.
SOURCE: Industrial Vegetation Management.
VOLUME: 6
PAGE(S): 12-14
YEAR: 1974

[The author provides a general description of the bird species diversity along the experimentally sprayed electric transmission right-of-way described by Bramble and Byrnes (1955, 1967a,b).]
(KVM abstract)

Citation Number 36
AUTHOR: Bramble, W. C. and W. R. Byrnes.
TITLE: Impact of brush control on wildlife food and cover.
SOURCE: In: W.H. Byrnes and H.A. Holt (eds.). Herbicides in Forestry. Proceedings of the J.S. Wright Forestry Conference. Purdue University, West Lafayette, Indiana.
VOLUME:
PAGE(S): 136-155
YEAR: 1976

[The study initiated by Bramble and Byrnes (1955) is described and the effects of the various treatments on game species is discussed. Evidently the right-of-way with its low dense plant cover has produced edges and type interspersion in contrast to the uncut forest with its sparse ground layer, and is providing an important improvement of the local habitat.]
(KVM abstract)

Citation Number 37
AUTHOR: Bramble, W. C. and W. R. Byrnes.
TITLE: Evaluation of the wildlife habitat values of rights-of-way.
SOURCE: Journal of Wildlife Management.
VOLUME: 43
PAGE(S): 642-649
YEAR: 1979

Wildlife habitat on segments of a sprayed electric transmission right-of-way (ROW) was evaluated by a new technique [described by Flood et al. 1977, USF&W Serv. Res. Bull. 132] that provided useful quantitative habitat values based upon field rating of essential needs of selected species. Similar evaluation was made of the adjacent forest unmodified by a ROW. Use of the technique in central Pennsylvania with white-tailed deer (Odocoileus virginianus) gave an average value of 8.2 for segments of a sprayed ROW with a forest edge as compared with 5.5 for adjacent oak forests without a ROW. A realistic evaluation of the differences between the 2 habitat types appeared to be obtained. ...
(Authors' abstract)

Citation Number 38
AUTHOR: Bramble, W. C. and W. R. Byrnes.
TITLE: Effect of an electric transmission right-of-way on forest wildlife habitat.
SOURCE: In: R. E. Tillman (ed.). Proceedings of the Second Symposium, Environmental Concerns in Rights-of-way Management. Mississippi State University.
VOLUME:
PAGE(S): 57.1-57.11
YEAR: 1981

A new evaluation technique has been used to obtain quantitative values for important habitat factors that can be related to the needs of wildlife. A comparison has been made of wildlife habitat on replicated right-of-way treatment areas with the adjoining forest without a right-of-way. The average habitat value of the forest was 5.0. The right-of-way habitat traversing the forest averaged 7.6 for areas maintained by herbicide sprays, and 7.7 for areas maintained by cutting.
(Authors' abstract)

Citation Number 39
AUTHOR: Bramble, W. C. and W. R. Byrnes.
TITLE: Thirty years of research on development of plant cover on an electric transmission right-of-way.
SOURCE: Journal of Arboriculture.
VOLUME: 9
PAGE(S): 67-74
YEAR: 1983

A study of vegetation development and production of wildlife food and cover has been made on an electric transmission right-of-way (ROW) in central Pennsylvania over a period of 30 years. Vegetation was maintained with herbicide sprays of 2,4-D, 2,4,5-T and ammonium sulfamate (AMS) compared with handcutting on separate areas assigned in a randomized block design over a 3-mile segment of ROW. A low plant cover resistant to tree invasion was developed which changed from dominant forest plants (bracken, vernal sedge, loosestrife, witch-hazel, and blueberry) to a relatively stable proclimax maintained by spraying and which was dominated by a combination of forest plants plus plants of openings (sweetfern, blackberry, dewberry, goldenrods, and hayscented fern). All of these dominant plants spread vegetatively by rhizomes or shallow roots to produce a mosaic pattern of irregular patches. Wildlife food and cover was increased on all areas and valuable shrubby edges developed. This produced a high wildlife habitat rating for the ROW as compared with the adjoining forest.
(Authors' abstract)

Citation Number 40
AUTHOR: Bramble, W. C., W. R. Byrnes and M. D. Schuler.
TITLE: The bird population of a transmission right-of-way maintained by herbicides.
SOURCE: Journal of Arboriculture.
VOLUME: 10
PAGE(S): 13-20
YEAR: 1984

A census was made of the bird population on an electric transmission right-of-way (ROW) and the adjoining forest in central Pennsylvania in July, 1982. The ROW had been maintained for 30 years by herbicide sprays with hand-cutting as a control. A large and diverse bird population of 31 species, which averaged 6.4 birds per hectare per census day had developed on the ROW. The common species were typical of shrublands and open areas. In the adjoining forest, an average of 3.4 birds per hectare were counted per day; and the population contained 27 species. There was no significant difference at the 0.05 level between the number of birds on handcut- and herbicide-maintained ROW areas; the numbers of birds was significantly less in the forest than on the ROW. Immature birds made up 8% of the total ROW count.

(Authors' abstract)

Citation Number 41
AUTHOR: Bramble, W. C., W. R. Byrnes and M. D. Schuler.
TITLE: Effects of special right-of-way maintenance on an avian population.
SOURCE: Journal of Arboriculture.
VOLUME: 12
PAGE(S): 219-226
YEAR: 1986

The effects of five right-of-way (ROW) maintenance techniques on birds was studied on an electric transmission line right-of-way in central Pennsylvania. The techniques included handcutting and four different herbicide applications. An important feature of these techniques was a differential treatment of wire and border zones of the ROW. Bird censuses made before and after treatment indicated that the total number of birds of the six most common species were not significantly affected by any of the six treatments. Although a decrease occurred in the average number of species counted, species diversity after treatment was not significantly different between treatments. Important changes occurred in the relative number of individuals per species and, as a result, in species dominance, after both handcutting and herbicide treatments.

(Authors' abstract)

Citation Number 42
AUTHOR: Brown, E. R.
TITLE: Impact of range improvement practices on wildlife habitat.
SOURCE: In: M.A. Newton (ed). Herbicides and vegetation management in forest, ranges, and noncrop lands. School of Forestry, Oregon State University, Corvallis.
PAGE(S): 243-247
YEAR: 1967

Although herbicides have little direct effect on wildlife species, the ecological changes that they create in wildlife habitat have a very pronounced effect. [The effects of range vegetation management by herbicides on elk, deer, sage grouse, and antelope are reviewed.]

(KVM abstract)

Citation Number 43
AUTHOR: Bull, E. L. and A. D. Partridge.
TITLE: Methods of killing trees for use by cavity nesters.
SOURCE: Wildlife Society Bulletin.
VOLUME: 14
PAGE(S): 142-146
YEAR: 1986

[Six methods of creating snags and the use of these snags by cavity nesting birds were evaluated on the Starkey Experimental Forest, Union Co., Oregon. Methods included topping with a chainsaw, herbicide (MSMA), topping by dynamite, girdling, fungal inoculation, and pheromone application. Trees topped with a chainsaw provided the best potential nest sites. Although herbicide killed the trees, the trees frequently fell and were seldom used for foraging or nesting.]

(KVM abstract)

Citation Number 44
AUTHOR: Buttery, R. F. and P. W. Shields.
TITLE: Range managment practices and bird habitat values.
SOURCE: In: D. Smith (ed.). Proceedings of the Symposium Management of Forest Habitat for Nongame Birds. United States Department of Agriculture, Forest Service, General Technical Report.
VOLUME: WO-1
PAGE(S): 183-189
YEAR: 1975

This paper aggregates available information on the known and probable effects of fourteen range management practices upon nongame bird habitat. Five research goals are suggested to secure the additional information necessary to predict these effects, to determine bird habitat requirements, and to present findings in a manner usable in the formulation of range management plans. [Herbicide treatment is one of the range management practices discussed.]

(Authors' abstract)

Citation Number 45
AUTHOR: Campo, J. J. and G. A. Hurst.
TITLE: Soft mast production in young pine plantations.
SOURCE: Proceedings of the Annual Conference of the Southeastern Association of Fish and Wildlife Agencies.
VOLUME: 34
PAGE(S): 470-475
YEAR: 1980

[Soft mast production was measured on loblolly pine plantations, ages 1 to 9 years, in Mississippi. Treatment effects analyzed were plantation age, site preparation method, fertilization, and herbicide application. Tree-crushed and burned plantations were sprayed with 2,4,5-T @ 0.91 kg/ha in May. Spraying at the peak of blackberry production, age 4 or 5, probably decreased mast production the year of spraying because blackberry plants and other potential mast producers decreased in abundance after herbicide application. Two years after spraying, at age 6 and 7, mast production was so low that there was no difference between sprayed and unsprayed.]

(KVM abstract)

Citation Number 46
AUTHOR: Carlson, R. A.
TITLE: The noxious weed problems on state wildlife lands.
SOURCE: Proceedings of the North Central Weed Control Conference.
VOLUME: 29
PAGE(S): 108-109
YEAR: 1974

[Minnesota] finds itself on the one hand planting grasses and legumes for wildlife nesting and then spraying these same fields for noxious weeds with the resultant loss of legumes and broadleaf plants. The environmental concern on the use of herbicides and the potential loss of wildlife habitat through continued application poses a...problem and concern.

(KVM abstract)

Citation Number 47
AUTHOR: Carpenter, L. H.
TITLE: A literature review on the role of mineral fertilizers in big game range improvement. Part 1: Effects of nitrogen fertilizer and 2,4-D herbicide on range forage production and use.
SOURCE: Colorado Division Game, Fish, and Parks, Special Report.
VOLUME: 28
PAGE(S): 9
YEAR: 1972

Literature on the effects of nitrogen fertilizer and 2,4-D herbicide on native rangelands is reviewed. Particular attention is given to findings where there are demonstrated or inferential significance to wildlife, especially big game. The effects on plant growth, vegetative composition, chemical content of plants, and palatability of plants to grazing animals induced by the fertilizer and herbicides used, separately or in combination, reveal possibilities for their beneficial application to game ranges.
(Author's abstract)

Citation Number 48
AUTHOR: Carpenter, L. H.
TITLE: Nitrogen-herbicide effects on sagebrush deer range.
SOURCE: Ph.D. Dissertation, Colorado State University, Fort Collins.
PAGE(S): 174
YEAR: 1976

Three areas located on big sagebrush range in Middle Park, Colorado were studied to evaluate the effect of ammonium nitrate fertilizer applied with and without 2,4-D herbicide on herbage yields and botanical composition. Nitrogen was applied at five levels: 0, 33.6, 67.2, 100.8, 134.4 kg/ha...and 2,4-D herbicide at two levels: 0, 2.2 kg/ha.... Measurements of grazing use by tame, trained deer were made each winter on the various treatments. ... The herbicide reduced shrub herbage, total herbage, and forb yields in all years. Grass yields increased in all years on the herbicide treated plots. ... The deer did not show a significant preference for plants in any one individual treatment. Contrary to general belief, grasses consistently made up over 60 percent of deer diets during winter grazing trials.
(Author's abstract)

Citation Number 49
AUTHOR: Carr, H. D. and F. A. Glover.
TITLE: Effects of sagebrush control on sage grouse.
SOURCE: Transactions of the North American Wildlife and Natural Resources Conference.
VOLUME: 35
PAGE(S): 205-215
YEAR: 1970

... By 1.5 years after spraying [an area in northcentral Colorado with 2,4-D], sagebrush control had not obviously affected strutting activities or grounds. Neither had it definately affected nesting density of success; however, nests on sprayed areas tended to be near unsprayed areas. The effects of sagebrush control on nesting may become more evident as dead sagebrush deteriorates. Brood production and survival had not noticeably been affected. Sprayed sagebrush affected but did not hamper movements of adult sage grouse; however, they avoided block-sprayed areas (except for strutting), probably because necessary habitat requirements were lacking. Areas sprayed in 50-yard wide strips had no obvious effects on distribution or movements of adult sage grouse. ... (Authors' summary)

Citation Number 50
AUTHOR: Carter, M. C., J. W. Martin, J. E. Kennamer, and M. K. Causey.
TITLE: Impact of chemical and mechanical site preparation on wildlife habitat.
SOURCE: Bernier, B. and C. H. Winget (ed). Forest soils and forest land management. Laval University Press, Quebec, Canada.
VOLUME:
PAGE(S): 323-333
YEAR: 1975

(see below, Carter et al. 1975)

Citation Number 51
AUTHOR: Carter, M. C., J. W. Martin, J. E. Kennamer and M. K. Causey.
TITLE: Impact of chemical and mechanical site preparation on wildlife habitat.
SOURCE: Down-To-Earth.
VOLUME: 31
PAGE(S): 14-18
YEAR: 1975

Chemical site preparation does not completely eliminate all vegetation. ... Frequently, the abundance and diversity of the vegetation on the chemically prepared sites is greater than that which occurred prior to timber harvest or results from mechanical site preparation. ... On chemically prepared areas, many of the woody mast producers escape injury, recover or resprout. If regeneration areas are well interspersed with mature stands, and if stand rotation length is sufficient to allow resprouts to reach mast-bearing age, the long term effects of chemical site preparation should not be detrimental. (KVM abstract)

Citation Number 52
AUTHOR: Carvell, K. L.
TITLE: Environmental impacts of herbicides on electric transmission line rights-of-way.
SOURCE: Journal of Arboriculture.
VOLUME: 1
PAGE(S): 129-130
YEAR: 1975

[Reports on a study of the environmental impact of frequent herbicide application to electric transmission line right-of-way in nine states. Comparison of] unsprayed old fields with the communities present on the line study areas showed that line area communities are comparable, or often superior, to the old fields for wildlife.

(KVM abstract)

Citation Number 53
AUTHOR: Cavanagh, J. B., D. P. Olson, and S. N. Macrigeanis.
TITLE: Wildlife use and management of power line rights-of-way in New Hampshire.
SOURCE: In: R. Tillman (ed) Proceedings of the First National Symposium, Environmental Concerns in Rights-of-way Management. Mississippi State University.
VOLUME: 1
PAGE(S): 275-285
YEAR: 1976

[Wildlife abundance on a newly clearcut area of a right-of-way in New Hampshire was significantly lower than that on a selectively cut area but significantly greater than that on an old clearcut area which had been maintained with foliage sprays of 2,4-D and 2,4,5-T.]

(KVM abstract)

Citation Number 54
AUTHOR: Chamberlain, E. B. and T. K. Goodrich.
TITLE: Aerial and mist-blower application of herbicides in southern forests as related to wildlife management.
SOURCE: Transactions of the North American Wildlife and Natural Resources Conference.
VOLUME: 27
PAGE(S): 384-393
YEAR: 1962

[In addition to other conclusions, the Herbicide Sub-Committee, Southeastern Section of The Wildlife Society reported that] it appears that widespread application of herbicides on upland, pine-hardwood sites may benefit deer and rabbit, harm squirrel, turkey, and coon, and temporarily benefit grouse. As the age of the pine stand increases, conditions for deer and rabbit will also probably worsen. [Recommendations for minimizing impacts on wildlife are presented and prime research needs are outlined.]

(KVM abstract)

Citation Number 55
AUTHOR: Chamberlain, E. B., Jr.
TITLE: Effects of hardwood control on food and cover.
SOURCE: In: L. K. Halls (ed.). White-tailed Deer in the Southern Forest Habitat. Southern Forest Experiment Station, Nacodoches, Texas.
VOLUME:
PAGE(S): 77-80
YEAR: 1969

The importance of hardwoods in providing food and cover for white-tailed deer in the southern forest habitat is documented by pertinent literature. Hardwood control is, therefore, a matter of much concern in deer management. The most common types are burning, chemical, and mechanical. In one or another form, the practice is well established. There are direct relationships between hardwood controls (and timber management practices generally) and production of deer foods. Effects depend upon intensity of treatment and on size and distribution of treatment blocks.
(Author's abstract)

Citation Number 56
AUTHOR: Chasko, G. G. and J. E. Gates.
TITLE: Avian breeding success in relation to grassland and shrubland habitats within a 138 kV Transmission-line corridor.
SOURCE: In: R.E. Tillman (ed.). Proceedings of the Second Symposium, Environmental Concerns in Rights-of-Way Management. Mississippi State University.
PAGE(S): 68.1-68.12
YEAR: 1979

During the nesting season of 1978, avian breeding success was evaluated at two 18.4-ha sites along a 138 kV transmission-line corridor in Allegany County, Maryland. [Two study sites were selected: a grassland mowed annually in late summer and a shrubland site maintained by periodic selective herbicide spraying.] Breeding success was highest in the shrubland portion of the corridor. Bird use of the grassland area was minimal and limited to two mixed-habitat species. Characteristic grassland birds were absent from this corridor habitat type. Although overall breeding success at the grassland site was lower than at the shrubland site, individuals of certain avian species nesting in smaller patches of shrubs at this site had much higher success rates.
(Authors' abstract)

Citation Number 57
AUTHOR: Chen, M. Y.
TITLE: Effects of herbicides and repeated burns on the understory vegetation of loblolly-shortleaf pine forests on hilly terrains.
SOURCE: Ph. D. Dissertation, Auburn University.
PAGE(S): 143
YEAR: 1974

Herbicides [2,4,5-T, 2,4-D, and picloram] and repeated burns were tested in 40-year-old stands of loblolly-shortleaf pine (Pinus taeda and P. echinata) on hilly terrain at Camden, Alabama. ... Over a ten-year period, understory composition and wildlife habitat were drastically changed. The hardwood canopy of trees over six feet in height was greatly reduced by burning and double spraying treatments. ... Herbicide treatments only slightly increased the yield of game food. Repeated winter burning was considered the best of the treatments applied from the standpoint of a combined wood-wildlife production goal.

(Author's abstract)

Citation Number 58
AUTHOR: Christensen, M. D., J. A. Young and R. A. Evans.
TITLE: Control of annual grasses and revegetation in the ponderosa pine woodlands.
SOURCE: Journal of Range Management.
VOLUME: 27
PAGE(S): 143-145
YEAR: 1974

Application of 1.12 kg/ha of the herbicide atrazine sufficiently controlled medusahead or downy brome to permit establishment of perennial wheatgrass in ponderosa pine woodlands previously burned by wildfires. ... Bitterbrush seedlings established naturally in areas treated with atrazine. Apparently the herbicide treatment created a desirable habitat for seed caching by rodents, along with reduction of competition from annual grasses. ...

(Authors' abstract)

Citation Number 59
AUTHOR: Clough, G. C.
TITLE: Relations of small mammals to forest management in northern Maine.
SOURCE: Canadian Field-Naturalist.
VOLUME: 101
PAGE(S): 40-48
YEAR: 1987

The effects of forest management practices on small mammals were investigated across northern Maine in the summer of 1982. Fourteen different forest types, grouped as early successional stages, mature conifer, and mature mixed or hardwood, were studied. Ten species of mammals were collected. Relative abundance, species richness, diversity, and evenness for each habitat and niche breadth for individual species were calculated. ... Clearcut sites sprayed with herbicide [2,4,5-T] or burned one to four years previously had low abundance but retained moderate diversity and richness. ...
(Authors' abstract)

Citation Number 60
AUTHOR: Conner, R. N., J. C. Kroll and D. L. Kulhavy.
TITLE: The potential of girdled and 2,4-D injected southern red oaks as woodpecker nesting and foraging sites.
SOURCE: Southern Journal of Applied Forestry.
VOLUME: 7
PAGE(S): 125-128
YEAR: 1983

Comparisons of extent of decay in southern red oaks (Quercus falcata Michx.) revealed that trees injected with 2,4-D decayed sooner than girdled trees. Internal examinations of treated trees revealed that girdling and injection permitted growth of heartwood- and sapwood-decaying fungi, a condition necessary for woodpecker nest cavity excavation. As a result of the delayed decay, girdling produces better woodpecker habitat in southern red oak. Girdled southern red oaks remain standing longer for woodpeckers to use as foraging and nesting sites. Number of snags required to support various percentages of woodpecker population maximums are presented.
(Authors' abstract)

Citation Number 61
AUTHOR: Connor, R. N., J. G. Dickson and B. A. Locke.
TITLE: Herbicide-killed trees infected by fungi: potential cavity sites for woodpeckers.
SOURCE: Wildlife Society Bulletin.
VOLUME: 9
PAGE(S): 308-310
YEAR: 1981

[The hardwoods in a 130-ha mixed loblolly-shortleaf, pine/hardwood forest in Houston Co., Texas were injected with 2,4-D and then aerially mist blown with 2,4,5-T. Two years later the 4 species of hardwoods examined had fruiting bodies of 10 species of fungi present. The authors conclude that injection of 2,4-D into selected hardwoods could be beneficial to cavity nesters by providing potential nesting and foraging sites. Injecting 10-20% of undesirable trees every 3-4 years could provide a sustained supply of snags.]
(KVM abstract)

Citation Number 62
AUTHOR: Copeland, J. D. and G. A. Hurst.
TITLE: Deer forage in loblolly pine plantations during the first year following intensive site preparation.
SOURCE: Annual Meeting of the Southeast Deer Study Group, Little Rock, Arkansas.
VOLUME: 7
PAGE(S): 11
YEAR: 1984

Use of chemicals (herbicides) in intensive pine plantation management is increasing throughout the Southeast. Three loblolly pine (Pinus taeda) plantations [...in Mississippi...] were sampled for preferred white-tailed deer (Odocoileus virginianus) forage in September 1982 and March 1983. The plantations were mechanically prepared (sheared, raked into windrows and burned, disced, and bedded) in the fall of 1981, planted in February 1982, and aerially sprayed with 4.68 or 7.01 l/ha of Velpar (hexazinone) in April 1982. Forage averaged 101 kg/ha in September 1982 and 4.3 kg/ha in March 1983. Total forage varied from 44 to 149 kg/ha in September and 2 to 8.4 kg/ha in March on the 3 plantations. Forbs accounted for 53% ...in September and 11%...in March; vines 32%...in September and 55%...in March; grasses 3.4%...in September and 18%...in March; and woody browse, including stems and attached leaves, accounted for 11%...in September and 16% in March.
(Authors' abstract)

Citation Number 63
AUTHOR: Copeland, J. D. and G. A. Hurst.
TITLE: Deer forage on pine plantations after intensive mechanical and chemical site preparation.
SOURCE: Proceedings of the Annual Southern Weed Science Society.
VOLUME: 39
PAGE(S): 237
YEAR: 1986

[Three loblolly pine plantations in Oktibbeha Co., Mississippi, were sampled for preferred white-tailed deer forage at plantation ages 1 and 2. Plantations were sprayed with 0.5 or 0.75 lb/ac Velpar (hexazinone) in April of the first growing season. Deer forage by plant category (grass, forb, vine, woody) was estimated in Sept. 1982 and 1983 and in March 1983 and 1984. Total deer forage averaged 90 lb/ac in Sept. 1982 and 1,014 lb/ac in Sept. 1983. Total deer forage in March 1983 was 4 lb/ac but increased to 61 lb/ac in March 1984.]
(KVM abstract)

Citation Number 64
AUTHOR: Coulter, L. L.
TITLE: The role of herbicides in wildlife production through creation and stabilization of habitats.
SOURCE: Down-To-Earth.
VOLUME: 13
PAGE(S): 4-6
YEAR: 1957

[Herbicides are now available which can be a real aid in producing more game on less land and in stabilizing vegetation types suitable for wildlife. The roles of herbicides in habitat management include: creating and maintaining openings in wooded areas, browse production, improvement of waterfowl habitat, chemical seedbed preparation for game food patches and other uses.]
(KVM abstract)

Citation Number 65
AUTHOR: Cran, H. J., Jr.
TITLE: Preservation of desirable species through selective use of herbicides.
SOURCE: Proceedings of the Northeast Weed Control Conference.
VOLUME: 23
PAGE(S): 294-297
YEAR: 1969

[The Connecticut Shade Tree Council was established to prepare recommendations for the use of herbicides in controlling undesirable vegetation. These recommendations were approved in 1960 and The Connecticut Light and Power Company applied them to its roadside brush control specifications. Techniques for selectively using herbicides to maintain desirable low-growing woody plants and herbs that provide food and cover for wildlife are provided.]
(KVM abstract)

Citation Number 66
AUTHOR: Crawford, H. S.
TITLE: Effect of aerial 2,4,5-T sprays on forage production in west-central Arkansas.
SOURCE: Journal of Range Management.
VOLUME: 13
PAGE(S): 44
YEAR: 1960

In May 1957, several hardwood tracts in the Ozark Mountains near Paris, Arkansas, were aerially sprayed with 2,4,5-T in order to convert them to range. [Description of vegetative responses are provided. The sprayed areas produced more browse plants of the species preferred by deer, such as blueberry and grape than the unsprayed areas.]

(KVM abstract)

Citation Number 67
AUTHOR: Crouch, G. L.
TITLE: Atrazine improves survival and growth of ponderosa pine threatened by vegetative competition and pocket gophers.
SOURCE: Forest Science.
VOLUME: 25
PAGE(S): 99-111
YEAR: 1979

Atrazine was applied to 0.1-acre (0.04-ha) plots of planted ponderosa pine (Pinus ponderosa) in south-central Oregon to alleviate competition from herbage and remove food supply of pocket gophers (Thomomys mazama Merriam) that prey on the trees. ... Fall treatments reduced abundance of gopher mounds eightfold compared with no treatment or application of atrazine in spring. Moreover, few mounds were counted during the years when herbicide effects were greatest. Gophers were responsible for most of the pine mortality, but losses were considerably lower on plots treated in the fall. ... Treatments may be even more effective on larger tracts where gophers do not have ready assess to untreated areas.

(Author's abstract)

Citation Number 68
AUTHOR: Cummings, M. W.
TITLE: Control of pocket gophers.
SOURCE: Proceedings of the Vertebrate Pest Control Conference.
PAGE(S): 113-125
YEAR: 1962

[In addition to other methods, the use of herbicides to remove gophers is discussed. On large areas of rangeland where weedy plants were the dominant vegetation, weed control with herbicidal spray resulted in removal of up to 90% of the gopher populations due to removal of their food supply.]

(KVM abstract)

Citation Number 69
AUTHOR: D'Anieri, P., M. L. McCormack, Jr., D. M. Leslie, Jr. and S. M. Zedaker.
TITLE: The small mammal community in a glyphosate conifer release treatment in Maine.
SOURCE: Proceedings of the Northeastern Weed Science Society.
VOLUME: 40
PAGE(S): 205-209
YEAR: 1986

Small mammals were trapped in a 1-year-old glyphosate release treatment, a current-year glyphosate release treatment, and an unsprayed control treatment in a 4- to 5-year-old spruce-fir clearcut in Maine. The herbicide release did not affect the total number of small mammals on this site, but it did decrease the abundance of one species, the boreal redback vole. Creation of a more open habitat by glyphosate may not have been favorable for redback voles, but did not seem to affect numbers of masked shrews, deer mice, and pygmy shrews within one year after treatment.
(Authors' abstract)

Citation Number 70
AUTHOR: D'Anieri, P., D. M. Leslie, Jr., and M. L. McCormack, Jr.
TITLE: Small mammals in glyphosate-treated clearcuts in northern Maine.
SOURCE: Canadian Field-Naturalist.
VOLUME: 101
PAGE(S): 547-550
YEAR: 1987

Effects of glyphosate [N-(phosphonomethyl) glycine] on small mammals in four- to five-year-old clearcuts were evaluated by snap- and pit-trapping one area one year after treatment, one area two months before and after, and one untreated control. All areas were sampled simultaneously in four trapping periods from July to October, 1984. Seven species were captured, but Masked Shrews (Sorex cinereus), Deer Mice (Peromyscus maniculatus), Southern Red-backed Voles (Clethrionomys gapperi), and Pygmy Shrews (Microsorex hoyi) comprised 97% of 290 captures. Only Southern Red-backed Voles were affected by glyphosate application, being significantly more abundant on the control and less numerous on the one-year-old spray area. No short-term changes in captures occurred after the 1984 herbicide application.
(Authors' abstract)

Citation Number 71
AUTHOR: Darden, T. L.
TITLE: Bird communities in managed loblolly-shortleaf pine stands in East Central Mississippi.
SOURCE: M.S. Thesis, Mississippi State University.
PAGE(S): 117
YEAR: 1980

Bird communities during breeding and winter seasons were measured in 17 loblolly and shortleaf pine stands in east central Mississippi during 1975 and 1976. Bird diversity was evaluated in relation to (1) habitat structure and (2) forest management practices. Areas [site prepared by mist-blowing (2,4,5-T) and injecting (2,4-D)] resulted in higher values for avian diversity and numbers during early years [than areas that were tree-crushed and burned or sheared, raked, and bedded]. Differences in species diversity due to site preparation methods were negligible by stand age seven. (Author's summary)

Citation Number 72
AUTHOR: Darr, G. W.
TITLE: White-tailed deer habitat in the Texas Rolling Plains.
SOURCE: M.S. Thesis. Texas Technical University, Lubbock.
PAGE(S): 73
YEAR: 1971

A study of white-tailed deer habitat use was conducted during 1969-1971 [near] Colorado City, Texas [to] determine white-tailed deer use of habitats...and how existing brush control practices influence the deer use of habitats. ...controlling brush by spraying herbicides [2,4,5-T] appeared to be more favorable than chaining. White-tailed deer densities increased in recently sprayed stands of the mesquite-juniper redland habitat and the sandyland ecotone, while deer density was less on chained bottomlands. (Author's summary)

Citation Number 73
AUTHOR: Darr, G. W. and D. A. Klebenow.
TITLE: Deer, brush control, and livestock on the Texas Rolling Plains.
SOURCE: Journal of Range Management.
VOLUME: 28
PAGE(S): 115-119
YEAR: 1977

White-tailed deer (Odocoileus virginianus) were observed by spotlight in the Rolling Plains of Texas to determine deer use of habitats and how deer were influenced by brush control practices and grazing by livestock. ... Influence of deer use from brush control practices varied in each habitat. ... Herbicides had little detrimental effect and in some situations may have been beneficial. ... (Authors' abstract)

Citation Number 74
AUTHOR: DeFazio, J. T., Jr.
TITLE: Effects of tebuthiuron site preparation on white-tailed deer habitat in two mixed hardwood-southern pine forest types.
SOURCE: M.S. Thesis, University of Georgia, Athens.
PAGE(S): 79
YEAR: 1986

[The impacts of tebuthiuron site preparation on white-tailed deer habitat were evaluated on 2 mixed hardwood-southern pine forest types in Georgia. Total forage biomass on treated sites did not differ from control sites on either the Coastal Plain or Piedmont area. Results of this study indicate that tebuthiuron appeared to have little consistent effect on deer habitat, and what negative impacts occurred seemed to be balanced by positive impacts on forage availability.]

(KVM abstract)

Citation Number 75
AUTHOR: DeFazio, J. T., Jr., A. E. Stone and R. J. Warren.
TITLE: Effects of tebuthiuron site preparation on white-tailed deer habitat.
SOURCE: Wildlife Society Bulletin.
VOLUME: 16
PAGE(S): 12-18
YEAR: 1988

See DeFazio, 1986.

Citation Number 76
AUTHOR: DeFazio, J. T., Jr., R. J. Warren, A. E. Stone, S. K. Miller and C. R. Ford.
TITLE: Response of deer mice populations to tebuthiuron application on two areas in Georgia.
SOURCE: American Society of Mammalogist Annual Meeting.
VOLUME: 68
PAGE(S): 199
YEAR: 1988

[The authors] examined the effects of the herbicide tebuthiuron (3.0 kg ai/ha) on deer mice (Peromyscus spp.) populations in two areas with mixed southern pine-hardwood forests [by seasonal snap trap sampling]. ... On the Coastal Plain study area, the oldfield mouse (P. polionotus) ...tended to be greater on treated vs untreated sites in June...and January..., but were equal in September. ... However, these differences were not statistically significant ($P>0.05$; t-test). On the Piedmont Plateau study area,...mean abundance for white-footed mice (P. leucopus) on treated vs untreated sites tended ($P>0.05$) to be equal in June..., greater in January..., and lower in September... Despite the lack of statistical significance, the differences in Peromyscus abundances observed were closely related to herbicide-induced differences in seed and insect availability..., thus possibly indicating an effect on important foods of deer mice.

(Authors' abstract)

Citation Number 77
AUTHOR: Dickson, J. G.
TITLE: Impact of forestry practices on wildlife in southern pine forests.
SOURCE: Increasing Forest Productivity. Society of American Foresters Publication.
VOLUME: 82-01
PAGE(S): 224-230
YEAR: 1981

[The effects of forestry practices on wildlife populations in the southern coastal plain are discussed. Practices discussed include stand size, stand shape, stand age, tree species, regeneration method, site preparation methods, thinning, hardwood control, streamside management zones, snag retention, burning, and openings.]

(KVM abstract)

Citation Number 78
AUTHOR: Dodd, J. D., R. Jurries and A. T. Weichert.
TITLE: Stimulating native forage production for livestock and wildlife on fallow riceland.
SOURCE: Texas Agricultural Experiment Station, Progress Report.
VOLUME: 3325C
PAGE(S): 8
YEAR: 1975

The herbicide 2,4-D was applied at 0.5, 0.75 and 1.0 pound per acre in the spring following rice production. ... The trend, evident for 2 consecutive years, was toward decreased weed density as the herbicide rate was increased. However, weed densities were higher during the second year than during the year of treatment. ... The year following treatment, grass production was increased about 800 pounds per acre where 0.5 pounds per acre of 2,4-D was applied. The 0.75- and 1.0-pound per acre treatments increased grass production more than 1 ton per acre when compared with the control. The accelerated plant succession appeared to provide habitat for the Attwater's Prairie Chicken.

(Authors' abstract)

Citation Number 79
AUTHOR: Dwernychuk, L. W. and D. A. Boag.
TITLE: Effect of herbicide induced changes in vegetation on nesting ducks.
SOURCE: Canadian Field-Naturalist.
VOLUME: 87
PAGE(S): 155-165
YEAR: 1973

The effect of changes in characteristics of vegetation, induced by the herbicide, 2,4-D ester, on numbers and distribution of duck nests located on two islands in a lake in Alberta was studied over a 3-year period. Application of the herbicide significantly reduced the areas dominated by broad-leaved plants and permitted the expansion of areas dominated by grasses. Ducks preferred to nest among broad-leaved plants but avoided nesting among grasses. The distribution of duck nests was aggregated with concentrations of nests in areas of preferred cover which had remained unsprayed. Numbers of nesting ducks declined over the period of study. The implications of changes in vegetation in this decline are discussed.

(Authors' abstract)

Citation Number 80
AUTHOR: Easley, J. M.
TITLE: Effects of chemical brush control on vegetation in pine plantations, Kemper County, Mississippi.
SOURCE: M.S. Thesis. Mississippi State University.
PAGE(S): 45
YEAR: 1977

[Three 4-5 year-old pine plantations in Mississippi were sprayed in 1975 and 1976 with various types and rates of herbicides for pine release. The objectives of the study were:] (1) to study the effects of herbicides on vegetative composition, (2) to determine the effects of herbicidal spraying on white-tailed deer and bobwhite quail food plants, and (3) study the effectiveness of different sprays and rates on undesirable vegetation. [Herbicides evaluated included 2,4,5-T, Dowco, diclorprop, and silvex. In general, the woody desirable category was not adversely affected by herbicides to any great extent.] An increase in grasses after treatments would have to be classed as favorable. Vines are the most important category of food for deer and vines were particularly hard-hit by the herbicide applications. A general loss of forbs was noted in the study area in the flatwoods. Forbs increased in the hills, but this was probably due to a lack of uniform coverage by the herbicides.

(KVM abstract)

Citation Number 81
AUTHOR: Eaton, R. H. and J. E. Gates.
TITLE: Transmission-line rights-of-way management and white-tailed deer habitat: a review.
SOURCE: In: R.E. Tillman (ed.). Proceedings of the Second Symposium, Environmental Concerns in Rights-of-way Management, Mississippi State University.
PAGE(S): 58.1-58.7
YEAR: 1981

Based on a review of the literature, an examination of current rights-of-way management techniques was made to assess their effects on white-tailed deer (Odocoileus virginianus) habitat. Those techniques beneficial in improving habitat for deer are discussed in detail. The influence of adjacent habitat types on deer utilization are also assessed. Ways are suggested by which wildlife managers may implement this information for the benefit of deer herds. Areas needing additional research are indicated.
(Authors' abstract)

Citation Number 82
AUTHOR: Eckert, R. E., Jr., A. D. Bruner and G. J. Klomp.
TITLE: Response of understory species following herbicidal control of low sagebrush.
SOURCE: Journal of Range Management.
VOLUME: 25
PAGE(S): 280-285
YEAR: 1972

[Control of low sagebrush with 2,4-D in northern Nevada increased productivity of understory grass species. Sage grouse are dependent upon sagebrush species and associated forbs as a major part of their diet. Herbicidal control of low sagebrush will destroy this habitat. Therefore, to maintain sage grouse habitat, large-scale low sagebrush control projects should be joint ventures between the land management agencies and wildlife interests to select sites for treatment.]
(KVM abstract)

Citation Number 83
AUTHOR: Eckert, R. E., Jr., A. D. Bruner, G. J. Klomp and F. F. Peterson.
TITLE: Control of Rocky Mountain iris and vegetative response on mountain meadows.
SOURCE: Journal of Range Management.
VOLUME: 26
PAGE(S): 352-355
YEAR: 1973

Application of 2, 3, or 4 lb/acre of 2,4-D in mid-June or 3 or 4 lb/acre in early July gave 91 to 100% control of iris. Iris phenology at treatment ranged from late vegetative to late bloom. ... Slender wheatgrass and Nevada bluegrass were the most responsive species. Yield of sage grouse food plants, dandelion and yarrow, was severely reduced the first year after all treatments. Total forb production was deficient or minimal for sage grouse, and dandelion was deficient. Total forb production and dandelion component appeared adequate for existing sage grouse populations in the second and subsequent years after treatment.
(Authors' abstract)

Citation Number 84
AUTHOR: Eckert, R. E., Jr.
TITLE: Methods for improving mountain meadow communities.
SOURCE: In: S.B. Monsen and N. Shaw, (Compilers), Managing Intermountain Rangeland - Improvement of Range and Wildlife Habitat United States Department of Agriculture, Forest Service, General Technical Report.
VOLUME: INT-157
PAGE(S): 67-75
YEAR: 1983

Mountain meadow communities are not producing to their potential. This paper describes five ways to improve these communities for livestock, wildlife, and site stability. Methods discussed are weed control and seeding, iris control [using 2,4-D], tree and shrub transplants, check dams, and grazing management.
(Author's abstract)

Citation Number 85
AUTHOR: Egler, F. E.
TITLE: Our disregarded rights-of-way - Ten million unused wildlife acres.
SOURCE: Transactions of the North American Wildlife Conference.
VOLUME: 18
PAGE(S): 147-157
YEAR: 1953

[The author discusses the botanical problems involved with various types of spraying with 2,4-D and 2,4,5-T, the techniques involved, the botanical results, the relationships to wildlife food and cover, and relative future costs due to reinvading tree seedlings.]
(KVM abstract)

Citation Number 86
AUTHOR: Egler, F. E.
TITLE: Herbicides.
SOURCE: In: F.B. Golley and H.K. Buechner, (eds.). A practical guide to the study of the productivity of large herbivores.
VOLUME: IBP Handbook No. 7. Blackwell, Oxford.
PAGE(S): 252-255
YEAR: 1968

[Recommendations on the use of herbicides for wildlife habitat management are provided. The author concludes that vegetation management with herbicides is a new development with huge potential.]
(KVM abstract)

Citation Number 87
AUTHOR: Ehrenreich, J. H. and R. F. Buttery.
TITLE: Increasing forage on Ozark wooded range.
SOURCE: United States Department of Agriculture, Forest Service, Central States Forest Experiment Station, Technical Paper.
VOLUME: 177
PAGE(S): 10
YEAR: 1960

[A study in 1956 on the Sinkin Experimental Forest near Salem, Missouri compared the following treatments: (1) burning in early spring to remove litter and kill understory hardwoods; (2) burning in early spring and girdling of overstory trees; (3) poisoning both overstory and understory trees; (4) treating trees as in (3) and applying lime and fertilizer according to soil tests; and (5) check. By the second growing season, treatments 2 and 3 increased herbage production 40-60 times that of the control while burning alone (1) resulted in only 2-3 fold increases.]
(KVM abstract)

Citation Number 88
AUTHOR: Evans, R. A., J. A. Young and R. E. Eckert, Jr.
TITLE: The application and use of herbicides for brush and weed control.
SOURCE: In: S.B. Monsen and N. Shaw (compilers). Managing Intermountain Rangeland - Improvement of Range and Wildlife Habitats, United States Department of Agriculture, Forest Service, General Technical Report.
VOLUME: INT-157
PAGE(S): 32-38
YEAR: 1983

Use of herbicide provides effective and efficient control of brush and herbaceous weeds in the management of the sagebrush-grass ecosystem. Rabbitbush [Chrysothamnus spp.] and other root or crown-sprouting shrubs are harder to control than sagebrush and require careful timing of spraying or a wider spectrum of herbicides. Techniques have been developed for control of downy brome and other herbaceous weeds when seeding perennial grasses for improvement of degraded sagebrush rangelands. Weed control-seeding systems, involving control of brush and herbaceous weeds plus seeding of forage and browse species, have been successful in the conversion of degraded communities to stable, high-producing rangelands. [Herbicides discussed include 2,4-D, picloram, dicamba, and tebuthiuron.]
(Authors' abstract)

Citation Number 89
AUTHOR: Fagerstone, K. A., H. P. Tietjen and G. K. LaVoie.
TITLE: Effects of range treatment with 2,4-D on prairie dog diet.
SOURCE: Journal of Range Management.
VOLUME: 30
PAGE(S): 57-60
YEAR: 1977

Two established prairie dog colonies in Montana were studied to determine the effect of range treatment with 2,4-D on prairie dogs' diet. ... There was a significant reduction in foliar cover by forbs and shrubs on the treated colony but no change on the untreated colony. Foliar cover by grass did not change significantly on either area. ... Before spraying, prairie dogs ate 73% forbs and 5% grass. Afterward, they ate 9% forbs and 82% grass. The availability of these foods appeared to be responsible for the diet change. Despite the change in diet, the 2,4-D treatment appeared to have little detrimental effects on prairie dogs. They remained in good condition after treatment, as indicated by body weight, and there was no significant difference in prairie dog activity between the treated and untreated colonies. ...
(Authors' abstract)

Citation Number 90
AUTHOR: Foster, C. H. W.
TITLE: Wildlife use of utility right-of-way in Michigan.
SOURCE: M.S. Thesis, University of Michigan, Ann Arbor.
PAGE(S):
YEAR: 1956

[Among other points summarized, the author lists the following:] A general discussion of herbicides was presented with a more detailed consideration of the three most commonly employed: ammate, 2,4-D, and 2,4,5-T. Since most public utilities have at their disposal several methods of brush control, a real opportunity exists for consideration of wildlife without interference with the primary function of the rights-of-way.

(Author's summary)

Citation Number 91
AUTHOR: Freedman, B., A. M. Poirier, R. Morash, and F. Scott.
TITLE: Effects of the herbicide 2,4,5-T on the habitat and abundance of breeding birds and small mammals of a conifer clearcut in Nova Scotia.
SOURCE: Canadian Field-Naturalist.
VOLUME: 102
PAGE(S): 6-11
YEAR: 1988

After the silvicultural herbicide spraying of a conifer clearcut in Nova Scotia, the foliage cover of shrub-sized plants was reduced by an average factor of 41% compared with the pre-spray condition, while during the same period an unsprayed reference plot increased in cover by a factor of 29%. Shrub-sized plants on the sprayed plots were also reduced in stem density (by 31%) and basal area (67%). ... However, vegetation on the sprayed plots was still abundant, and the habitat changes were not sufficient to cause an important difference in the abundance, species richness, and diversity of breeding birds and mammals between sprayed and unsprayed plots. The total bird density was 71 pairs/10 ha on the unsprayed clearcut plot, 76 and 77 pr/10 ha on two plots sprayed at the prescribed silvicultural rate of 3 kg 2,4,5-T/ha, and 50 pr/10 ha on a plot sprayed at 6 kg/ha. The abundance of small mammals on these same treatment-plots was 12.8, 14.3, 13.5, and 11.7 per 100 trap-nights.

(Authors' abstract)

Citation Number 92
AUTHOR: Gibbens, R. P., C. H. Herbel, H. L. Morton, W. C. Lindemann, J. A. Ryder-White, D. B. Richman, E. W. Huddleston, W. H. Conley, C. A. Davis, J. A. Reitzel, D. M. Anderson, and A. Guiao.
TITLE: Some impacts of 2,4,5-T on a mesquite duneland ecosystem in southern New Mexico: a synthesis.
SOURCE: Journal of Range Management.
VOLUME: 39
PAGE(S): 320-326
YEAR: 1986

Two aerial applications of 2,4,5-T ... were applied to 3,634 ha of mesquite (Prosopis glandulosa Torr. var. glandulosa) duneland in southern New Mexico. Herbicidal residuals; herbaceous plant production; soil microorganisms, insect, small mammal, and bird populations; cattle weights; travel; time budgets; and diets were studied on the treated area and an adjacent, untreated area. [Herbaceous plant] production was greater on the sprayed than on the unsprayed area for the first 3 years and was about the same for both areas for the next 2 years. ... Population statistics for small mammals were similar on both treatments. More bird species were found on untreated than on sprayed areas. Overall, the 2,4,5-T treatment caused relatively minor perturbations in measured ecosystem components.
(Authors' abstract)

Citation Number 93
AUTHOR: Goodrum, P. D. and V. H. Reid.
TITLE: Wildlife implications of hardwood and brush control.
SOURCE: Transactions of the North American Wildlife Conference.
VOLUME: 21
PAGE(S): 127-141
YEAR: 1956

[The purpose of this paper was to show the growth and development of means to control environments and the lack of parallel studies to show the possible impact of such efforts on wildlife. A number of examples are presented that point out how vegetation control through the use of herbicides can benefit wildlife. Little is known of the effects of herbicides on habitats and the wildlife therein. It is obvious that control operations may result in both good and bad effects on wildlife, and range and forest owners are entitled to know what these effects are.]
(KVM abstract)

Citation Number 94
AUTHOR: Goodrum, P. D.
TITLE: Herbicides in relation to forest wildlife management in the southern United States.
SOURCE: Proceedings of the Fifth World Forestry Congress.
VOLUME: 3
PAGE(S): 1816-1817
YEAR: 1960

The use of phytocides in forest management may be detrimental or beneficial to wildlife, depending upon the purpose and method of application. ... Repeated applications may also kill, or seriously reduce, the production of deer browse plants and of seed from understory trees and shrubs. ... It appears that single applications of certain chemicals will greatly increase available deer forage of some species after the first year of application, but will top-kill most of the larger trees which are the best producers of mast. ... There is a pressing need for evaluating the effects of various phytocide application methods on wildlife populations and for learning what degree of hardwood control is permissible while retaining basic wildlife values.

(Author's conclusions)

Citation Number 95
AUTHOR: Grue, C. E., L. R. DeWeese, P. Mineau, G. A. Swanson, J. R. Foster, P. A. Arnold, J. N. Huckins, P. J. Sheehan, W. K. Marshall, and A. P. Ludden.
TITLE: Potential impacts of agricultural chemicals on waterfowl and other wildlife inhabiting prairie wetlands: an evaluation of research needs and approaches.
SOURCE: Transactions of the North American Wildlife and Natural Resources Conference.
VOLUME: 51
PAGE(S): 357-383
YEAR: 1986

The potential for agricultural chemicals [insecticides, herbicides, fertilizers] to enter prairie-pothole wetlands and impact wildlife dependent on these wetlands for survival and reproduction appears to be great. However, the actual risk to wetland wildlife from the inputs of these chemicals cannot be adequately assessed at this time, because of insufficient data. ...

(Authors' summary)

Citation Number 96
AUTHOR: Gruver, B. J.
TITLE: Management and live-brush density effects on avifauna in northwest Texas.
SOURCE: Ph.D. Thesis, Texas Tech. University, Lubbock.
PAGE(S): 369
YEAR: 1984

The objectives of the study were to determine the response of game- and nongame-bird populations to lowered live brush densities due to herbicide treatment [2,4,5-T], the effectiveness of management to favor game birds, the response of bobwhite parasites to game-bird management, and the effects of game-bird management on nongame bird populations. The study was conducted in Dickens and King Counties, Texas, from June 1981 to July 1983. ... The study indicated game- and nongame-bird population densities were not affected by lowered live-brush densities due to treatment in areas where dead brush was left standing. ...

(Author's abstract)

Citation Number 97
AUTHOR: Gruver, B. J. and F. S. Guthery.
TITLE: Effects of brush control and game-bird management on non-game birds.
SOURCE: Journal of Range Management.
VOLUME: 39
PAGE(S): 251-253
YEAR: 1986

[The authors] observed the responses of nongame birds to brush suppression and habitat management for game birds in the Rolling Plains of Texas during 1981-1983. Data from line transects were used to describe density, species diversity, species richness, and equitability. [They] observed no difference in these variables between untreated sites and sites late sprayed with herbicides in 1969. ... On the study area, past herbicide treatment [2,4,5-T] of mesquite (Prosopis grandulosa) and habitat management for game birds were compatible with nongame birds.

(Authors' abstract)

Citation Number 98
AUTHOR: Guthery, F. S., T. E. Shupe, L. J. Bareiss and C. E. Russell.
TITLE: Responses of selected plants to herbicide treatment of disturbed soil.
SOURCE: Wildlife Society Bulletin.
VOLUME: 15
PAGE(S): 247-251
YEAR: 1987

[As potential wildlife habitat management techniques, the authors] determined the effects of 14 herbicide treatments of autumn-disturbed soil on summer canopy coverage by forbs, grasses, crotons, and common sunflower and on species diversity on sandy loam soils in Kleberg County, Texas. Tebuthiuron, bromacil at 1.6 kg/ha, simazine, and hexazinone reduced coverage by forbs. Grass coverage increased at rates of 1.1 kg/ha for tebuthiuron and 4.3 kg/ha for simazine. Application of diuron at 4.3 kg/ha and diuron-bromacil at 0.5 kg/ha was cost effective in increasing the canopy coverage of crotons; a metolachlor treatment was cost effective in stimulating common sunflower. Twelve of the 14 treatments reduced plant diversity. [Other herbicides tested included oryzalin and oxyfluorfen.]

(Authors' summary)

Citation Number 99
AUTHOR: Gysel, L. W.
TITLE: Effects of different methods of releasing pine on wildlife food and cover.
SOURCE: Down-To-Earth.
VOLUME: 13
PAGE(S): 2-3
YEAR: 1957

From 1950 to 1952 a series of experiments was installed by the Lake States Experiment Station at the Pine River Experimental Forest, in Lower Michigan National Forest to compare various axe and chemical methods for eliminating the overstory oaks to release the valuable pine. After the release, dense ground cover of grasses and other herbs, taller berry-producing shrubs, tree sprouts, and red pine made environmental conditions which appeared to be ideal for deer, rabbits, grouse, and other forest animals. Low growing food and cover are especially important for wildlife in the oak type because of the lack of these animal requirements in the present uncut stands. [Herbicides used included 2,4-D and 2,4,5-T.]

(KVM abstract)

Citation Number 100
AUTHOR: Gysel, L. W.
TITLE: Vegetation and animal use of a powerline right-of-way in southern Michigan.
SOURCE: Michigan Agricultural Experiment Station, Quarterly Bulletin.
VOLUME: 44
PAGE(S): 697-713
YEAR: 1962

During this 5-year study, various plant communities in a mile of power line right-of-way through the Kellog Forest in Michigan were analyzed in detail to determine plant composition and density. [Selective foliage or basal sprays of 2,4,5-T were applied to designated communities.] The availability of food and cover for wildlife and results of a study of animal use of the right-of-way are reported. Animal use was apparently not directly affected by the herbicide, but by the composition and density of the vegetation in the rights-of-way and in the adjacent types.
(KVM abstract)

Citation Number 101
AUTHOR: Gysel, L. W.
TITLE: Vegetation changes and animal use of a powerline right-of-way after the application of an herbicide.
SOURCE: Down-To-Earth.
VOLUME: 18
PAGE(S): 7-10
YEAR: 1962

This paper is a condensation of Gysel, 1962

Citation Number 102
AUTHOR: Halls, L. K. and H. S. Crawford.
TITLE: Vegetation response to an Ozark woodland spraying.
SOURCE: Journal of Range Management.
VOLUME: 32
PAGE(S): 338-340
YEAR: 1965

Aerial spraying of an Ozark woodland with 2,4,5-T temporarily increased yields of grasses preferred by cattle. Reinvasion of woody plants and heavy grazing by cattle contributed to a subsequent decline in yields of grass. The invading shrubs included many species preferred by deer.
(Authors' abstract)

Citation Number 103
AUTHOR: Hamilton, K. C. and K. P. Buckholtz.
TITLE: Use of herbicides for establishing food patches.
SOURCE: Journal of Wildlife Management.
VOLUME: 17
PAGE(S): 509-516
YEAR: 1953

Six crops were sprayed pre-emergence with six chemicals in 1951 and plots of corn and soybeans were treated preemergence, at emergence, and post-emergence with three chemicals in 1952 [near Madison, Wisconsin] to investigate the possible value of herbicides in the establishment of food patches for upland game birds. [Chemicals included TCA, CMU, endothal, DN, CIPC, 2,4-D.] Initial control of weeds, the yield of weed seed, and weed cover on chemically treated plots varied with the herbicide and its rate and date of application. [The use of herbicides is] a distinct possibility for establishing food patches for upland game birds.
(Authors' summary)

Citation Number 104
AUTHOR: Hansen, R. M. and A. L. Ward.
TITLE: Some relations of pocket gophers to rangelands on Grand Mesa, Colorado.
SOURCE: Colorado Agricultural Experiment Station, Technical Bulletin.
VOLUME: 88
PAGE(S): 22
YEAR: 1966

Pocket gophers (Thomomys talpoides) were studied on Grand Mesa, in west-central Colorado, with special reference to age structure, breeding characteristics, population dynamics, food habits, and herbage production on a control area and on 2,4-D-treated areas between 1956 and 1962. One year after treatment with 2,4-D pocket gophers declined by 87%. A natural die-off was also observed on the control area in 1958 which decreased the population by 74%. ... Gopher abundance appeared positively correlated with the annual production of the primary foods of the pocket gopher. ... As the 2,4-D-treated rangelands returned toward the pretreatment perennial forb type, pocket gophers increased and became more abundant than on the adjacent unsprayed control areas. ...
(Authors' abstract)

Citation Number 105
AUTHOR: Hanson, W. R.
TITLE: Effects of some herbicides and insecticides on biota of North Dakota marshes.
SOURCE: Journal of Wildlife Management.
VOLUME: 16
PAGE(S): 299-308
YEAR: 1952

Five experiments with some common chemicals [including 2,4-D] were conducted in North Dakota to learn more about the effects of aerial spraying on marsh wildlife and its habitat. ... 2,4-D amine and water and 2,4-D ester and oil, reacted similarly on dicotyledonous plants and produced a heavy kill. The majority of monocotyledonous species was affected, although more so in the ester and oil spraying.

(KVM abstract)

Citation Number 106
AUTHOR: Harlow, R. F. and D. H. Van Lear.
TITLE: Silvicultural effects on wildlife habitat in the south (an annotated bibliography) 1953-1979.
SOURCE: Clemson University, Department of Forestry, Technical Paper.
VOLUME: 14
PAGE(S): 30
YEAR: 1981

... This annotated bibliography is a compilation of selected, published information to be used as a quick reference guide to research papers that explore the effects of silvicultural practices on wildlife habitat. Geographically, it covers the major physiographic regions in the Southern United States extending from Missouri to Maryland, south to Florida and eastern Texas. ...

(Authors' introduction)

Citation Number 107
AUTHOR: Harlow, R. F. and D. H. Van Lear.
TITLE: Silvicultural effects on wildlife habitat in the south (an annotated bibliography) 1980-1985.
SOURCE: Clemson University, Department of Forestry, Technical Paper.
VOLUME: 17
PAGE(S): 42
YEAR: 1987

see Harlow and Van Lear (1981)

Citation Number 108
AUTHOR: Harris, L. D.
TITLE: Effects of forest management practices on wildlife ecology: a list of citations.
SOURCE: University of Florida, IMPAC Report
VOLUME: 3(9)
PAGE(S): 108
YEAR: 1978

[A list of 1067 citations is provided on the effects of forest management practices on wildlife ecology. Citations are indexed by management practice (including herbicide use), wildlife group affected, habitat variable affected, and author.]

(KVM abstract)

Citation Number 109
AUTHOR: Harris, L. D., D. H. Hirth, and W. R. Marrion.
TITLE: The development of silvicultural systems for wildlife.
SOURCE: University of Florida, IMPAC Report
VOLUME: 4(5)
PAGE(S): 24
YEAR: 1979

Presented here are critical aspects of forest wildlife biology and ecology: diversity of environmental structure and forest structural diversity. Illustrations are given to dramatize their importance. Timber management affects wildlife habitat, and we present a capsule statement of judgment regarding common management practices such as site conversion, clearcutting, site preparation [including herbicides], and planting density. The silvicultural system advocated embodies three aspects discussed in depth: methods of regeneration; the form of trees; and the orderly arrangement of the crops over the whole forest.

(Authors' abstract)

Citation Number 110
AUTHOR: Hartley, D. R., D. H. Arner, and J. W. Lipe.
TITLE: A comparison of right-of-way maintenance treatments and use by wildlife.
SOURCE: In: A.F. Crabtree (ed.). Proceedings of the Third Symposium, Environmental Concerns in Rights-of-way Management. Mississippi State University.
PAGE(S): 623-629
YEAR: 1982

A comparison was made of deer, cottontail rabbit, and nongame bird usage of two power line rights-of-way (ROW) which were maintained by two different techniques. One ROW had a history of maintenance by broadcast spraying of herbicides, the other ROW was a demonstration ROW maintained by multiple techniques. In 1980 and 1981, the demonstration area had approximately 3 times the usage by deer and rabbits as the sprayed ROW. Nongame bird usage also showed an increased usage of the demonstration ROW over that of the sprayed ROW.

(Authors' abstract)

Citation Number 111
AUTHOR: Hartman, G. F.
TITLE: New herbicides can help conservation.
SOURCE: Wisconsin Conservation Bulletin.
VOLUME: 21
PAGE(S): 29-30
YEAR: 1956

The chemical [2,4-D and 2,4,5-T] that is doing so much in ruining good game cover along county roads, fence lines and rights-of-ways in southern Wisconsin, can by creative use, serve conservation well in our forested areas and our extensive brushy marshes.

(KVM abstract)

Citation Number 112
AUTHOR: Horejsi, R. G.
TITLE: Influence of brushlands on white-tailed deer diets in northcentral Texas.
SOURCE: M.S. Thesis, Texas Tech University, Lubbock
PAGE(S): 69
YEAR: 1973

[This study] indicates that problems arising with brush control programs and wildlife management center around cover removal and not forage changes. Indications are that total brush eradication over extensive areas will eliminate deer. Selective control or pattern arrangements will allow maintenance of wildlife populations. Brushy basal sprouts of mesquite and other browse species on a sprayed-chained-resprayed upland area appeared to offer adequate cover for deer. Designs that show patchwork arrangements centering around natural corridors (ravines, creeks, etc.) appear most beneficial.

(KVM abstract)

Citation Number 113
AUTHOR: Hull, A. C., Jr.
TITLE: Effect of spraying with 2,4-D upon abundance of pocket gophers in Franklin Basin, Idaho.
SOURCE: Journal of Range Management.
VOLUME: 24
PAGE(S): 230-232
YEAR: 1971

Four 50 x 50 foot plots were sprayed with 2 lb/acre 2,4-D in 1959, 1960, 1965, and 1969 to kill fleshy-rooted, spring-growing plants and annuals. These plants are the major source of food for pocket gophers. Averaging the 10-year period, 1960-1969, spraying reduced gopher mounds by 93% and winter casts by 94% when compared to the unsprayed areas.

(Authors' abstract)

Citation Number 114
AUTHOR: Huntley, J. C.
TITLE: The effects of several utility rights-of-way maintenance techniques on game food plants.
SOURCE: M.S. Thesis, Mississippi State University.
PAGE(S): 95
YEAR: 1977

Six utility rights of way maintenance techniques [winter burn, mow, disk, hand clear, selective basal spray, and aerial spray with 2,4,5-T] were studied to determine their effects on density of quail food plants, grasses not considered quail food, woody vegetation, and other vegetation. ... Winter burning with fertilizer produced significantly more quail food plants than all other treatments. Winter burning without fertilizer produced significantly more quail food plants than aerial and selective basal spraying, but not more than mowing. ... Selective basal spraying was the most effective technique at controlling undesirable woody plants. ...
(Author's abstract)

Citation Number 115
AUTHOR: Huntley, J. C. and D. H. Arner.
TITLE: The effect of utility right-of-way maintenance upon game food plants.
SOURCE: In: R.E. Tillman (ed.). Proceedings of the Second Symposium, Environmental Concerns in Rights-of-Way Management, Mississippi State University.
PAGE(S): 31.1-31.13
YEAR: 1981

Maintenance techniques for utility rights-of-way were studied to determine their effects on density of vegetation. The techniques included winter burning, mowing, disking, hand clearing, selective basal spraying, and aerial spraying [2,4,5-T]. The effects of fertilizing and seeding were also determined. Winter burning with fertilizer produced significantly more quail food plants than all other treatments. Winter burning without fertilizer produced significantly more quail food plants than did aerial and selective basal spraying, but not more than mowing. ... Selective basal spraying was the most cost effective in controlling unwanted woody plants. ... Cost data are given for all treatments. Research areas were located in the Gulf Upper Coastal Plain.
(Authors' abstract)

Citation Number 116
AUTHOR: Hurst, G. A. and T. R. Bourland.
TITLE: Hardwood density and species composition in bottomland areas treated for regeneration.
SOURCE: Southern Journal of Applied Forestry.
VOLUME: 4
PAGE(S): 122-127
YEAR: 1980

Seedling and sapling density of high- and low-commercial species varied from 994 to 2,792/acre on regenerated areas, age 3 to 8 years, on the Delta National Forest, Mississippi. The highest densities were in the oldest regenerated stands, on low flat sites and on areas that had not been hand-injected [with 2,4-D]. ... [Effects of timber management policies on wildlife are mentioned.] (KVM abstract)

Citation Number 117
AUTHOR: Hurst, G. A. and R. C. Warren.
TITLE: Intensive pine plantation management and white-tailed deer habitat.
SOURCE: In: R.H. Chabrech and R.H. Mills (eds.). Integrating Timber and Wildlife Management in Southern Forests. Louisiana State University Forestry Symposium.
VOLUME: 29
PAGE(S): 90-102
YEAR: 1980

[A study of the effects of intensive pine plantation management on deer habitat in the interior flatwoods of Mississippi began in 1971. Deer habitat suitability (forage availability) was assessed according to type of site preparation used (mist-blown and tree-injected, tree-crushed and burned, or bedded). In addition, the effects of thinning, burning, fertilizing, and chemical brush control on deer habitat were investigated. The authors conclude that deer habitat was adversely affected and benefitted by plantation management. Intensive pine plantation management can produce good habitat on a short or long rotation. Herbicides evaluated included 2,4,5-T, dowco, silvex, and dichlorprop.] (KVM abstract)

Citation Number 118
AUTHOR: Hurst, G. A. and R. C. Warren.
TITLE: Enhancing white-tailed deer habitat of pine plantations by intensive management.
SOURCE: Mississippi Agricultural Forest Experiment Station, Technical Bulletin.
VOLUME: 107
PAGE(S): 8
YEAR: 1981

[The effects of various pine plantation management strategies on habitat for white-tailed deer are discussed. These strategies include type of site preparation, age of the plantation, brush control with 2,4,5-T, controlled burning and thinning, thinning and fertilizing, roads, and supplemental practices. Recommendations for improving deer habitat in pine plantations, natural forests, and along stream management zones are provided.]
(KVM abstract)

Citation Number 119
AUTHOR: Hurst, G. A. and R. C. Warren.
TITLE: Impacts of silvicultural practices in loblolly pine plantations on white-tailed deer habitat.
SOURCE: In: E.P. Jones (ed.). Proceedings of the Second Biennial Southern Silvicultural Research Conference. United States Department of Agriculture, Forest Service, General Technical Report.
VOLUME: SE-24.
PAGE(S): 484-487
YEAR: 1982

Silvicultural practices such as burning, thinning, spraying, and fertilizing within pine plantations impact on white-tailed deer food (forage, mast) quantity, quality, digestibility, palatability, and availability. Other aspects of deer food, namely diversity, stability, and distribution (spatial, seasonal), and cover are affected by practices within and between plantations, such as setting (stand), site preparation, size, shape and situation (interspersion).
(Authors' abstract)

Citation Number 120
AUTHOR: Hurst, G. A. and R. C. Warren.
TITLE: Deer forage on pine plantations after a herbicide application for pine release.
SOURCE: Proceedings of the Southern Weed Science Society.
VOLUME: 39
PAGE(S): 238
YEAR: 1986

Preferred white-tailed deer (Odocoileus virginianus) forage abundance was determined in loblolly pine (Pinus taeda) plantations in the Upper Coastal Plain (hills) of Pickens County (PCP), Alabama, and a plantation in Webster County (WCP), Mississippi. ... The PCP was planted in December 1978 and received an aerial application of Velpar-sintered clay granules (10%), 2 lbs/ac, in May 1982... The WPC was planted in February 1978 and received an aerial application of Pronone 10G, 2 lbs/ac, in May 1982. ... Total deer forage in the PCP was significantly greater (P>0.05) on treated plots (838 lbs/ac) than on control plots (554 lbs/ac) in September. ... Total deer forage in the WCP in September was also significantly greater on the treated (877 lbs/ac) than on control (472 lbs/ac) plots. ... (Authors' abstract)

Citation Number 121
AUTHOR: Hurst, G. A. and P. M. Blake.
TITLE: Plant species composition following hexazinone treatment-site preparation.
SOURCE: Proceedings of the Southern Weed Science Society.
VOLUME: 40
PAGE(S): 194
YEAR: 1987

Plant species composition was studied on a loblolly pine (Pinus taeda) plantation in Oktibbeha County Mississippi. A mature pine-hardwood forest...was clearcut and the site prepared by shear, windrow (burn), single disk, and bed in late 1983. ... In March 1984, 1 plot in each [of 5] blocks received an aerial application...of Pronone(R) 5G (hexazinone) at 1 lb/ac a.i., another plot received a banded (5 ft wide) application on the bed by backpack sprayer of Velpar(R) (hexazinone), and a third plot was not treated. ... At the end of the first growing season after herbicide treatment, plant species composition was very similar on banded and control subplots, with fewer species on the broadcast treatment subplots. However, at the end of the second growing season herbicide treated subplots had more species of grasses, legumes, vines, woody, and sedges than control subplots. Only forb species were more numerous on control than on herbicide treated plots. (Authors' abstract)

Citation Number 122
AUTHOR: Hurst, G. A.
TITLE: Vegetative responses to imazapyr for pine release.
SOURCE: Proceedings of the Southern Weed Science Society.
VOLUME: 40
PAGE(S): 247
YEAR: 1987

Vegetative responses were studied in 3 loblolly pine (Pinus taeda) plantations in east-central Mississippi following an aerial application of Arsenal(R) (imazapyr) for pine release. ... Arsenal was applied at 0.5, 0.75, and 1.0 lb/ac a.i., with and without surfactant. ... Generally, plant occupancy by grasses and woody plants decreased while that by forbs and vines increased after Arsenal treatment. More plant species were found on line transects on treated plots than on control plots. Legumes, e.g. Lespedeza spp. were resistant to imazapyr. Deer forage was generally greater on treated plots, particularly those treated in June. Deer forage shifted from woody browse to forbs and vines. The very important vines, blackberry and dewberry (Rubus spp.), were resistant to imazapyr even at 1 lb/ac.

(Author's abstract)

Citation Number 123
AUTHOR: Hurst, G. A.
TITLE: Vegetation following imazapyr for site prep.
SOURCE: Proceedings of the Southern Weed Science Society.
VOLUME: 41
PAGE(S): 201
YEAR: 1988

Vegetation on a loblolly pine (Pinus taeda) plantation in Monroe County, MS was studied at age 1 and 2 years. ... An aerial application of Imazapyr (Arsenal) was applied at 0.75, 1.0, and 1.5 lbs/ac to one 5 acre plot for each rate. Total deer forage (age 1) averaged 193 lbs/ac on control and 126 lbs/ac on treated plots. At age 2 forage on control plots was 171 lbs/ac and forage on treated plots averaged 102 lbs/ac. A drought in the summer/fall of 1987 reduced deer forb forage. Average forage for the 2 years by plant category, control vs. treated, was grass 7 to 12, forb 25 to 51, vine 122 to 70, and woody 6 to 3. ...

(Author's abstract)

Citation Number 124
AUTHOR: Hurst, G. A. and W. E. Palmer.
TITLE: Vegetative responses to hexazinone for site prep.
SOURCE: Proceedings of the Southern Weed Science Society.
VOLUME: 41
PAGE(S): 210
YEAR: 1988

Vegetation on a 1 year old...and a 2 year old...loblolly pine (Pinus taeda) plantation was studied in September 1987. ... Site prep consisted of an aerial application of 30 lbs/ac of Pronone 10G (hexazinone) followed by a broadcast burn in late summer. ... Site preparation by herbicide and burn resulted in a plant community dominated by forbs. The presence of many dead trees (snags) provided excellent habitat for cavity nesting birds. Forage for deer was mostly forbs. However, the 2-year-old plantation had many legumes and was excellent northern bobwhite (Colinus virginianus) habitat.

(Authors' abstract)

Citation Number 125
AUTHOR: Hurst, G. A.
TITLE: Forestry chemicals and wildlife habitat.
SOURCE: Forest Farmer.
VOLUME: 48
PAGE(S): 10-11
YEAR: 1989

[The author reviews the findings from 15 years of research on the effects of forestry chemicals on wildlife habitat in Mississippi. The author concludes that chemicals are a tool for improving certain aspects of some wildlife species habitat. Intensively managed plantations create good deer, quail, rabbit, and wild turkey habitat. Herbicides discussed include 2,4-D, 2,4,5-T, hexazinone, and imazapyr.]

(KVM abstract)

Citation Number 126
AUTHOR: Jahn, L. R. and B. H. Popov.
TITLE: A preliminary report on the experimental use of herbicides in Wisconsin to control and manipulate bog type vegetation for waterfowl.
SOURCE: Proceedings of the North Central Weed Control Conference.
VOLUME: 13
PAGE(S): 29-30
YEAR: 1956

[In 1954, the Wisconsin Conservation Department carried out experimental herbicide treatments of leatherleaf (Chamaedaphne calyculata) to determine the relative effectiveness of 2,4-D and 2,4,5-T and if 2,4-D and 2,4,5-T can be used to modify the normal plant succession in bogs and thereby increase their value for waterfowl. Top growth of leatherleaf was partially controlled temporarily with one treatment of either 2,4-D or 2,4,5-T. However, resprouting from the extensive root system takes place in the first year. Even with herbicide manipulation of the bog type plant succession, intensive management appears necessary to produce desirable plants in an unfavorable environment in reasonable quantities for waterfowl.]

(KVM abstract)

Citation Number 127
AUTHOR: Jenkins, B. C.
TITLE: Wildlife habitat development with herbicides in Michigan.
SOURCE: Proceedings of the North Central Weed Control Conference.
VOLUME: 12
PAGE(S): 58
YEAR: 1955

[This paper presents some of the problems of wildlife habitat management that herbicides may help to solve; outlines briefly the field tests made in Michigan; and encourages the development of even more effective herbicides and better methods of using them. Use of herbicides in habitat management for sharp-tailed grouse, white-tailed deer, waterfowl, and woodchuck is discussed. Herbicides used include TCA and dalapon.]

(KVM abstract)

Citation Number 128
AUTHOR: Johnson, D. R.
TITLE: Effects of range treatment with 2,4-D on food habits of rodents.
SOURCE: Ecology.
VOLUME: 45
PAGE(S): 241-249
YEAR: 1964

The food habits of rodents inhabiting shrub grasses and perennial forb ranges in western Colorado were investigated to determine the kinds and proportions of foods eaten, the effects of range treatment with 2,4-D on food habits, and the degree of competition for food among rodents inhabiting these ranges. ... Grass seeds comprised a larger proportion and forb and shrub seeds a smaller proportion of the diet of deer mice inhabiting areas treated with 2,4-D than that for untreated areas. The availability of these food items appeared to be responsible for these observed differences in diet. ... Although there was no significant difference in diets [of least chipmunks] on treated and control areas, the influence of the availability of certain seeds was evident. Range treatment with 2,4-D had no effect on the diet of montane voles. The greater abundance of montane voles on treated areas appeared to be due to an increase in grass cover and not to an increase in available food. ...
(Author's abstract)

Citation Number 129
AUTHOR: Johnson, D. R. and R. M. Hansen.
TITLE: Effects of range treatment with 2,4-D on rodent populations.
SOURCE: Journal of Wildlife Management.
VOLUME: 33
PAGE(S): 125-132
YEAR: 1969

The treatment of perennial forb and shrub-grass ranges with 2,4-D in western Colorado usually produced an increase in grass cover and a decrease in the cover of most forbs and shrubs. Recovery time of herbicide-sensitive species varied. ... The density and litter size of the deer mouse (Peromyscus maniculatus) was little affected by the 2,4-D treatment. The density of northern pocket gophers (Thomomys talpoides) and least chipmunks (Eutamias minimus) was reduced. Montane voles (Microtus montanus) increased in abundance following treatment of a perennial forb range. With the reestablishment of forb dominance, pocket gopher and vole populations returned to pre-treatment levels. Density changes of pocket gophers on treated ranges were due primarily to changes in the availability of food, those of chipmunks to both food and cover, and those of voles to cover changes.
(Authors' abstract)

Citation Number 130
AUTHOR: Johnson, J. C.
TITLE: A study of clearcuts as wildlife habitat, Kemper County, Mississippi.
SOURCE: M.S. Thesis, Mississippi State University.
PAGE(S): 81
YEAR: 1974

Studies dealing with the productivity of fleshy fungi, vegetation (food availability studies), and mast, along with population estimates for selected animal species were conducted on loblolly pine plantations and three forested areas in the interior flatwoods of Kemper County, Mississippi. ... Bedded plantation [i.e. shear, pile, burn, bed, and plant], age 2, was significantly superior in summer food production over injected plantations [i.e. mistblown, burn, plant, and inject]. ... The bedded site treatment was superior to the injected site treatment in deer food production during the winter when the amount of food present is most important. ...it seems that the bedded site treatment is superior for deer, especially during the critical winter months.

(Author's abstract and summary)

Citation Number 131
AUTHOR: Johnson, R. R.
TITLE: Improving forage production and big game winter range with phenoxy herbicides.
SOURCE: Proceedings of the Western Weed Science Society.
VOLUME: 28
PAGE(S): 40-43
YEAR: 1975

[2,4-D, silvex, 2,4,5-T,] and a 1:1 mixture of 2,4-D or 2,4,5-T and dichlorprop were aerially applied at rates of 2.24 to 3.36 kg/ha to 2.8 ha plots near Rifle and Crawford, Colorado. ... July application was superior to August application and repeat sprays after two years were better than after three years. All herbicides gave similar control of Gambel oak, but silvex and dichlorprop were less effective on Saskatoon serviceberry (Amelanchier alnifolia), roundleaf snowberry (Symphoricarpos rotundifolius) and squaw-apple (Peraphyllum ramosissimum) than 2,4,5-T or a mixture of 2,4-D and dichlorprop.

(Author's abstract)

Citation Number 132
AUTHOR: Keith, J. O., R. M. Hansen and A. L. Ward.
TITLE: Effect of 2,4-D on abundance and foods of pocket gophers.
SOURCE: Journal of Wildlife Management.
VOLUME: 23
PAGE(S): 137-145
YEAR: 1959

Aerial spraying of weedy, mountain rangeland in western Colorado with 2,4-D resulted in the following changes 1 year after treatment: 1) Pocket gopher populations were reduced 87%, 2) Production of perennial forbs was reduced 83% and grass production increased 37%, 3) The diet of pocket gophers changed from 82% forbs to 50% forbs, and from 18% grass to 50% grass. Untreated control areas showed no significant change in gopher numbers or herbage production from one year to the next. Gopher food habits did not change on untreated areas.
(Authors' summary)

Citation Number 133
AUTHOR: Kessler, W. B., A. T. Weichert, and J. D. Dodd.
TITLE: Attwater prairie chicken ecology in relation to agricultural and range management practices.
SOURCE: Texas Agricultural Experiment Station, Consolidated Progress Report.
VOLUME: 3665
PAGE(S): 81
YEAR:

The availability and use of Attwater greater prairie chicken habitat were investigated from 1974 to 1976 on the Attwater Prairie Chicken National Wildlife Refuge and adjacent agricultural lands in Colorado County, Texas. Rice agriculture, the dominant land use, provided preferred summer and brood-rearing cover. Fallow fields treated with dicamba, 2,4-D, and an experimental herbicide to accelerate grass establishment retained effective forb canopy for summer cover in spite of decreased forb density. Utilization - availability analysis indicated that treated and untreated fallow rice fields, of various fallow stages, were used in proportion to availability...
(Authors' abstract)

Citation Number 134
AUTHOR: Kessler, W. B., and J. D. Dodd.
TITLE: Responses of coastal prairie vegetation and Attwater prairie chickens to range management practices.
SOURCE: Proceedings of the First International Rangeland Congress.
VOLUME: 1
PAGE(S): 473-476
YEAR: 1978

see Kessler et al. (Citation 133)

Citation Number 135
AUTHOR: Kimmel, R. O.
TITLE: Potential of landowner maintenance programs to increase wildlife benefits from powerline rights-of-way.
SOURCE: Transactions of the Northeast Section of the Wildlife Society.
VOLUME: 38
PAGE(S): 31
YEAR: 1981

... Landowner maintenance programs on right-of-way acreage replace broadcast-herbicide maintenance with manual-selective maintenance. ... Wildlife exposure to chemical herbicides is decreased. This could be of particular importance to the recruitment of species such as wild turkey (Meleagris gallopavo) and ruffed grouse (Bonasa umbellus). Power company spray seasons usually coincide with the period when chicks are using rights-of-way for feeding. ...

(Author's abstract)

Citation Number 136
AUTHOR: Kirkland, G. L., Jr.
TITLE: Population and community responses of small mammals to 2,4,5-T.
SOURCE: United States Department of Agriculture, Forest Service, Research Note.
VOLUME: PNW-314
PAGE(S): 6
YEAR: 1978

The population and community responses of small mammals to application of the herbicide 2,4,5-T were studied on the Fernow Experimental Forest, Parsons, West Virginia. Data from live-trap and snap-trap sampling of small mammals before and after herbicide treatment revealed either neutral or positive responses. There was a significant correlation between the ranked order of abundance of species in pretreatment and posttreatment samples; this indicated that no major shift in community composition had occurred. Total numbers of small mammals tended to increase after aerial application of the herbicide. Shrews (Sordidae) and mice (Critecinae) increased significantly; voles (Microtinae) declined slightly. The decrease in the abundance of microtine rodents resulted from a differential decline in the abundance of diurnal species.

(Author's abstract)

Citation Number 137
AUTHOR: Klebenow, D. A.
TITLE: Sage grouse versus sage-brush control in Idaho.
SOURCE: Journal of Range Management.
VOLUME: 23
PAGE(S): 396-400
YEAR: 1970

Spraying with herbicides to control sagebrush was detrimental to nesting grouse and to sage grouse broods. Nesting ceased when one area was sprayed and another contained a nest five years after spraying. Broods were less affected. One area contained broods three years after it had been sprayed, but variation existed from one area to the next, for another that was sprayed in 1962 was not being used in 1966.

(Author's abstract)

Citation Number 138
AUTHOR: Krefting, L. W., H. L. Hansen and M. H. Stenlund.
TITLE: Use of herbicides in inducing regrowth of mountain maple for deer browse.
SOURCE: Minnesota Forestry Notes.
VOLUME: 42
PAGE(S): 2
YEAR: 1955

[The authors tested the relative effectiveness of 2,4-D and 2,4,5-T in stimulating regrowth of mountain maple (Acer spicatum) on Superior National Forest in Minnesota. Observations of the extent of browsing by deer on the regrowth indicate no aversion to the treated clumps as compared to the controls. The results indicate that in comparison with cutting of mountain maple to encourage regrowth, spraying treatments can be applied at a great saving of labor.]

(KVM abstract)

Citation Number 139
AUTHOR: Krefting, L. W., H. L. Hansen and M. H. Stenlund.
TITLE: Stimulating regrowth of mountain maple for deer browse by herbicides, cutting and fire.
SOURCE: Journal of Wildlife Management.
VOLUME: 20
PAGE(S): 434-441
YEAR: 1956

In order to stimulate regrowth and to provide more browse, [2,4-D and 2,4,5-T], fire, and diesel oil were used to top-kill mountain maple that had grown out of reach of deer in northeastern Minnesota. ... 2,4-D was generally more effective than 2,4,5-T in inducing regrowth. ... Deer browsed both one and two-year-old stems of regrowth, and even some preference was shown for the herbicide-treated clumps.

(Authors' summary)

Citation Number 140
AUTHOR: Krefting, L. W. and H. L. Hansen.
TITLE: Comparison of winter and spring application of 2,4-D to induce regrowth of mountain maple for deer browse.
SOURCE: Minnesota Forestry Notes.
VOLUME: 66
PAGE(S): 2
YEAR: 1958

[Two 1-acre plots of mountain maple were sprayed with 2,4-D (12 lbs acid /100 gal fuel oil) in February and March 1956 to determine relative effectiveness at inducing regrowth. Results indicated that mid-winter application of 2,4-D results in greater mortality to the stems sprayed as well as less regrowth both in numbers of sprouts per clump and in height of the sprouts at the end of the first growing season.]
(KVM abstract)

Citation Number 141
AUTHOR: Krefting, L. W., H. L. Hansen and R. W. Hunt.
TITLE: Aerial application of 2,4-D to improve the browse supply for deer.
SOURCE: Proceedings of the Society of American Foresters.
PAGE(S): 103-106
YEAR: 1960

[Aerial applications of 2,4-D were made to increase the quantity of desirable deer browse. The first year response to treatment varied consistently with the density of the overhead tree canopy. Spraying resulted in killing much large, out of reach browse, and replacing it with young sprouts and suckers readily available to deer. The cumulative effect of the spray at the end of the second year shows that there was a marked increase in the total number of stems on all cover types.]
(KVM abstract)

Citation Number 142
AUTHOR: Krefting, L. W., H. L. Hansen and R. W. Hunt.
TITLE: Improving the browse supply for deer with aerial applications of 2,4-D.
SOURCE: Minnesota Forestry Notes.
VOLUME: 95
PAGE(S): 2
YEAR: 1960

[Aerial applications of 2,4-D were made on 8 2-acre plots on the Tamarac National Wildlife Refuge. Cover types sprayed were aspen, jack pine, oak, and upland brush. Woody and herbaceous plants were tallied before and after spraying. From a deer browse improvement standpoint, the first year results were encouraging, since the greatest increase in the aspen and jack pine types was in the first preference group. The extent to which aerial applications of 2,4-D will increase the browse supply for deer will depend on the species composition of the shrubs and on the density of the tree canopy.]
(KVM abstract)

Citation Number 143
AUTHOR: Krefting, L. W.
TITLE: Use of silvicultural techniques for improving deer habitat in the Lake States.
SOURCE: Journal of Forestry.
VOLUME: 60
PAGE(S): 40-42
YEAR: 1962

[This paper evaluates,] from a wildlife standpoint, the following silvicultural techniques: prescribed burning, disking and bulldozing, planting food and cover, planting openings, use of phytocides, and timber-cutting practices. [Only 2,4-D is discussed.]

(KVM abstract)

Citation Number 144
AUTHOR: Krefting, L. W. and H. L. Hansen.
TITLE: Use of phytocides to improve deer habitat in Minnesota.
SOURCE: Proceedings of the Southern Weed Control Conference.
VOLUME: 16
PAGE(S): 209-216
YEAR: 1963

Tests in the Lake States have demonstrated the possibility that phytocides may be effective in creating openings needed by deer and other wildlife, in increasing the browse supply, and in establishing patches of conifer cover. It was found that 2,4-D was superior to 2,4,5-T when used to top-kill mountain maple that had grown out of reach of deer and to stimulate regrowth by sprouts. ... Aerial application of 2,4-D at 2 pounds of acid in 3.5 gallons of water per acre made to a variety of forest cover types in northwestern Minnesota were found to effectively reduce the population of low value American and beaked hazel and to favor the more desirable browse plants for deer such as chokecherry, arrow-wood, and several species of dogwood. Both the ratio and total quantity of these preferred species was increased. Two years after spraying, the grasses and sedges increased markedly.

(Authors' summary)

Citation Number 145
AUTHOR: Krefting, L. W. and H. L. Hansen.
TITLE: Increasing browse for deer by aerial application of 2,4-D.
SOURCE: Journal of Wildlife Management.
VOLUME: 33
PAGE(S): 784-790
YEAR: 1969

The effectiveness of aerial applications of 2,4-D in reducing the population of hazel (Corylus spp.) and other low-preference browse species and increasing the supply of the better browse plants for white-tailed deer (Odocoileus virginianus) was studied from 1958 to 1966 in each of four cover types in Minnesota. Stem counts after 2 years and dry-weight determinations after 6 years showed that the proportions and total abundance of the better browse plants was greater on the sprayed than on control plots. Browse production after spraying varied from 22 lb on the unsprayed jack pine (Pinus banksiana) plot to 90 lb per acre on the sprayed upland plot. The abundance of grasses and sedges increased on all sprayed plots, though a decline began after about 4 years following spraying. The response by other herbaceous species varied by species and cover type. Deer were attracted to sprayed plots for winter browsing and summer bedding. Pellet groups were still more abundant on the treated than on the untreated areas, especially in the aspen type, when the study was terminated 8 years after spraying.

(Authors' abstract)

Citation Number 146
AUTHOR: Kufeld, R. C.
TITLE: Improving gambel oak ranges for elk and mule deer by spraying with 2,4,5-TP.
SOURCE: Journal of Range Management.
VOLUME: 30
PAGE(S): 53-57
YEAR: 1977

Areas of Gambel oak vegetation in northwestern Colorado were sprayed with 2,4,5-TP to evaluate effects on plant abundance and deer and elk use 2 and 5 years after treatment. Grasses increased in abundance 44% after 2 years; shrubs and forbs decreased 29 and 15%, respectively. After 5 years, grasses and shrubs were 17 and 7%, respectively, above pretreatment levels of abundance; forbs were 4% below. Total vegetation on the treated area decreased 4% after 2 years, while a 5% increase was recorded after 5 years. Elk and deer use on the sprayed area increased 73 and 16%, respectively, 2 years after spraying. After 5 years elk use was 11% above pretreatment levels and deer use was 21% below. If 2,4,5-TP is used to spray Gambel oak to modify plant composition and increase elk and deer use, the area should be resprayed at 3-year intervals, indefinitely, if the improved situation is to be maintained.

(Author's abstract)

Citation Number 147
AUTHOR: Ladino, A. G. and J. E. Gates.
TITLE: Responses of animals to transmission-line corridor management practices.
SOURCE: In: R.E. Tillman (ed.). Proceedings of the Second Symposium, Environmental Concerns in Rights-of-Way Management, Mississippi State University.
PAGE(S): 53.1-53.10
YEAR: 1981

Animal activity patterns were evaluated within and bordering a 138 kV transmission-line corridor in western Maryland. Two study sites were selected based on differences in management of corridor vegetations. One site was maintained in grasses and forbs by annual mowing, while the other site was kept in shrubs and small trees by spraying with herbicides [Tordon]. Number of crossings per day by animal species in the corridor, the corridor-forest edge, and the adjacent forest habitats at each study site were recorded using a sand-tracking technique from May through November 1978. Results indicated significant differences in activity patterns of certain animals in each habitat type within and between study sites. Particular animals also showed definite seasonal activity patterns.
(Authors' abstract)

Citation Number 148
AUTHOR: Landes, R. K.
TITLE: Herbicides for wildlife habitat manipulation.
SOURCE: In: W.H. Byrnes and H.A. Holt (eds.). Herbicides in Forestry. Proceedings of the J.S. Wright Forestry Conference, Purdue University, West Lafayette, Indiana.
PAGE(S): 113-127
YEAR: 1976

Objectives of this paper are to explain why herbicides have been and are being used in wildlife habitat manipulation, review some herbicide uses, and consider alternative methods of habitat manipulation. ... Use of herbicides is one way to manipulate cover diversity. Several reported uses of herbicides in wildlife management including aerial, ground, basal, cut stump, and granular treatments on land and wetlands, are reviewed. ... It seems apparent that herbicide use is a valuable tool for several types of cover management and that there are few, if any, alternatives to accomplish certain objectives in some situations. ... [Herbicides listed include 2,4-D, 2,4,5-T, dalapon, TCA, amitrole, picloram, dicamba, simazine, silvex, bladex, atrazine, and endothall.]
(Author's summary)

Citation Number 149
AUTHOR: Lautenschlager, R. A.
TITLE: Forestry, herbicides, and wildlife.
SOURCE: J. A. Bissonette (ed.) Is good forestry good wildlife management? Maine Agricultural Experiment Station Miscellaneous Publication.
VOLUME: 689
PAGE(S): 299-308
YEAR: 1986

At present aplication rates, herbicide conifer release in the northeast probably affects wildlife populations little. However, if herbicide conifer release increases greatly, it will: reduce the ability of treated areas to support moose (Alces alces) and small mammal populations for a short period following treatment; at most cause a short term reduction of deer (Odocoileus virginianus) and hare (Lepus americanus) populations, which are more likely to benefit within a few years after application; and benefit warblers and associated bird species normally found in the spruce/fir (Picea spp./Abies balsamea) forest. Although herbicide conifer release could benefit a variety of forest wildlife, forestry herbicides have developed an unjustified negative reputation. ...
(Author's abstract)

Citation Number 150
AUTHOR: Lawrence, W. H.
TITLE: Effects of vegetation management on wildlife.
SOURCE: In: M.A. Newton (ed.). Herbicides and Vegetation Management in Forests, Range and Noncrop Lands. Oregon State University, Corvallis.
PAGE(S): 88-93
YEAR: 1967

[Three examples of wildlife-herbicide interactions are discussed: 1) maintenance of suitable wildlife habitat, 2) conversion of an existing vegetation pattern to another vegetative type, and 3) ecological control of animal numbers through habitat manipulation. Examples from the literature are provided.]
(KVM abstract)

Citation Number 151
AUTHOR: Lawson, B. A. and J. E. Gates.
TITLE: Habitat niche discrimination of passerines along a transmission line corridor.
SOURCE: In: R.E. Tillman (ed.). Proceedings of the Second Symposium, Environmental Concerns in Rights-of-Way Management, Mississippi State University.
PAGE(S): 67.1-67.8
YEAR: 1981

Habitat variables important in discriminating among eight species of passerines nesting along a 138 kV transmission-line corridor in western Maryland were sought. ... Corridor maintenance by selective applications of herbicide was found to create more habitat diversity, hence greater bird species diversity, than maintenance by annual mowing.
(Authors' abstract)

Citation Number 152
AUTHOR: Lee, D. V.
TITLE: The effects of herbicidal control on wildlife habitat in Louisiana.
SOURCE: M. S. Thesis, Louisiana State University, Baton Rouge.
PAGE(S): 73
YEAR: 1971

... Data collected from one to seven years after application of 2,4,5-trichlorophenoxyacetic acid (2,4,5-T) on nine study areas in Louisiana indicate no detrimental effects on understory vegetation of importance to wildlife. In most instances, selected browse species were not significantly increased in number; however, neither were these plants significantly reduced in number. White-tailed deer demonstrated no preference between treated and non-treated browse plants, although they did show preference for different species. Very little difference was observed between aerial and mist blower applications on total vegetation and preferred browse species two years after application. ...
(Author's abstract)

Citation Number 153
AUTHOR: Leonard, J. W. and S. A. Cain.
TITLE: The role of herbicides in wildlife management.
SOURCE: Recent Advances in Botany, University of Toronto Press.
PAGE(S): 1422-1426
YEAR: 1961

[The use of herbicides in game management in the future is likely to depend on two considerations: (1) cost is often too high; (2) the game manager is still unable to predict with desirable confidence just what results he may get. Specific aspects of game and fishery management in which herbicides have been used and in which results offer promise are discussed.]
(KVM abstract)

Citation Number 155
AUTHOR: Lewis, J. B. and R. L. Dunkeson.
TITLE: Use of herbicides for improving Ozark wild turkey and deer range.
SOURCE: Proceedings of the North Central Weed Control Conference.
VOLUME: 13
PAGE(S): 28
YEAR: 1956

Wild turkey restoration is a major problem confronting Missouri game biologists,... On non-commercial sites unwanted woody vegetation has been killed by a combination of cutting and girdling, frilling and basal spray; 2,4,5-T is used according to manufacturers' recommendations, in frills and basal spray. Hickories, elms, ash, and poor quality oaks are killed. Food-producers, such as dogwood, gum, serviceberry, and grape, and healthy acorn producers are released for greater fruit production.
(Authors' abstract)

Citation Number 156
AUTHOR: Lindzey, J. S.
TITLE: Food and cover modification.
SOURCE: In: R.E. McDermott and W.R. Byrnes (eds.). Herbicides and Their Use in Forestry. School of Forestry, Pennsylvania State University.
PAGE(S): 40-73
YEAR: 1960

[There are several ways in which the use of herbicides can be expected to supplement other methods for the management of habitat for wildlife. Several examples are provided from the literature that illustrate the various uses of herbicides in wildlife habitat management. Herbicides should not be considered a cure-all, but a tool to be used at the right time and place and in the right way.]
(KVM abstract)

Citation Number 157
AUTHOR: Lyon, L. J. and W. F. Mueggler.
TITLE: Herbicide treatment on north Idaho browse evaluated six years later.
SOURCE: Journal of Wildlife Management.
VOLUME: 32
PAGE(S): 538-541
YEAR: 1968

Five species of north Idaho browse plants that were treated in 1960 were reexamined to evaluate long-term response to herbicides [2,4-D and 2,4,5-T. They] found some lag in plant mortality of undesirable species coupled with generally poor persistence of sprouting and relatively quick recovery from crown dieback in the desirable species. Redstem ceanothus (Ceanothus sanguineus), the most desirable browse plant tested, was killed by all treatments.
(Authors' abstract)

Citation Number 158
AUTHOR: MacMullan, R. A. and E. M. Harger.
TITLE: Control of undesirable plants in waterfowl projects.
SOURCE: Proceedings of the North Central Weed Control Conference.
VOLUME: 12
PAGE(S): 58-59
YEAR: 1955

[To determine the best methods of creating openings in dense sedge (Carex and Scirpus) or leatherleaf (Chamaedaphne calyculata), the Michigan Department of Conservation conducted a series of experiments involving plowing and different chemical treatments. Ammate at a concentration of 0.25 lbs/gal @ 250 gal/ac appears to provide a good kill of leatherleaf, although smaller concentrations may be effective. Dalapon at 10 lbs/ac applied as a foliage drench yielded 100% kill of sedge. Possibly smaller amounts would be effective.]
(KVM abstract)

Citation Number 159
AUTHOR: Malecki, R. A. and T. J. Rawinski.
TITLE: New methods for controlling purple loosestrife (Lythrum salicaria).
SOURCE: New York Fish and Game Journal.
VOLUME: 32
PAGE(S): 9-19
YEAR: 1985

New methods for controlling purple loosestrife were investigated...in central New York during 1978-1980. Neither late-summer cutting nor partial flooding had more than a seasonal impact on the plant, but cutting followed by flooding in the same year may result in significant stress. ... The herbicide glyphosate was extremely effective (100 percent control) on test plots when applied at a rate of 1.7 kg/ha in mid-August. Viability of seeds from treated plants was sufficient for concern. Sowing Japanese millet on exposed moist-soil sites at a rate of 34 kg/ha following a drawdown resulted in successful control of loosestrife on those areas as well as production of a desirable waterfowl food.
(Authors' abstract)

Citation Number 160
AUTHOR: Malefyt, J. J. de Wall.
TITLE: Effect of vegetation management on bird populations along electric transmission rights-of-way.
SOURCE: In: A. F. Crabtree (ed.). Proceedings of the Third Symposium Environmental Concerns in Rights-of-way Management, Mississippi State University.
PAGE(S): 570-580
YEAR: 1982

[The effects of right-of-way vegetation management technique on] bird species diversity (BSD) and density values were determined from transect-strips in eastern New York. BSD and density were highest on ROWs where trees received cut-and-stump or basal treatments with herbicides. BSD and density were consistently found to be lower on ROWs brush-mowed the year previous to census taking, and similarly low densities were found years later on ROWs broadcast sprayed with herbicides. The effect of mowing mixed-woody vegetation on ROW bird populations is very short-termed when compared to ROWs aerially treated with herbicides. The effects of various ROW vegetation management techniques on nesting and foraging guilds were also analyzed. Low and middle foliage feeders were more abundant on ROWs which received cut-and-stump and basal treatments. ...
(Author's abstract)

Citation Number 161
AUTHOR: Malefyt, J. J. de Wall.
TITLE: Effects of vegetation management on breeding bird populations along electric transmission rights of way.
SOURCE: New York Fish and Game Journal.
VOLUME: 32
PAGE(S): 197-210
YEAR: 1985

Approximately 80,000 acres of vegetation are managed by the major electric utilities on their electric transmission rights of way in New York. A variety of methods are used, but their effects on bird populations are relatively unknown. Data concerning the principal methods were recorded from strip transects on 14 rights of way in western and eastern New York. Bird species diversity and abundance were highest where selective treatment with herbicides had been used to eliminate undesirable vegetation, whereas they were consistently lower on sites that had been mowed or aerially sprayed. Selective treatment especially favored the low- and middle-foliage feeders and shrub-nesting species. However, ground feeders were common on the mowed sites. The costs of these methods are discussed. (Author's abstract)

Citation Number 162
AUTHOR: Martin, A. C.
TITLE: Improving duck marshes by weed control.
SOURCE: United States Department of the Interior, Fish and Wildlife Service, Circular.
VOLUME: 19
PAGE(S): 49
YEAR: 1953

[Through the control of undesirable weeds in duck marshes, desirable duck-food plants can be given new opportunity to succeed in many localities. Methods of control, including herbicides (2,4-D) are presented for numerous undesirable marsh weeds and woody plants including Typha spp., Phragmites communis, Zizaniopsis miliacea, Panicum hemitomon, Eichhornia crassipes, Juncus roemerianus, Alternanthera philoxeroides, Nuphar spp., Nymphaea spp., Nelumbo pentapetala, Hibiscus spp., Trapa natans, Salix spp., Alnus spp., Tamarix gallica, and Cephalanthus occidentalis.]
(KVM abstract)

Citation Number 163
AUTHOR: Martin, N. S.
TITLE: Effects of chemical control of sagebrush on the occurrence of sage grouse in southwestern Montana.
SOURCE: M.S. Thesis, Montana State College, Bozeman.
PAGE(S): 38
YEAR: 1965

A study was conducted...in Southwestern Montana [on] 1,710 acres [that] had been sprayed in 1961 with 2,4-D to control sagebrush [to] obtain quantitative data on effects of chemical control of sagebrush on a sage grouse population. ... The similarity of the vegetation composition at sage grouse locations and in the unsprayed strips led to the conclusion that the differences in numbers of sage grouse observed in sprayed and unsprayed strips were related to vegetation composition. ...high frequency food plants were more abundant in unsprayed than in sprayed strips, which strengthened the conclusion that differences in numbers of sage grouse observed in unsprayed and sprayed strips were related to vegetation composition.

(Author's abstract)

Citation Number 164
AUTHOR: Martin, R. P.
TITLE: Effects of the herbicide, 2,4,5-T, on breeding bird populations.
SOURCE: Proceedings of the Oklahoma Academy of Science.
VOLUME: 46
PAGE(S): 235-237
YEAR: 1965

Total populations of nesting birds on 20-acre study areas [in Creek County, Oklahoma] dominated by postoak-blackjack forest were 17 species and 140 breeding males per 100 acres in the control area compared to 18 species and 205 breeding males in the [2,4,5-T] sprayed area. [Surveys were conducted 3 years after spraying. The sprayed area provided a suitable habitat for significantly more pairs of a number of species.] Based on one season's observations the treatment with herbicides had no marked adverse effect upon any nesting species of birds and actually improved habitat for a few species.

(Author's summary)

Citation Number 165
AUTHOR: May, T. A., D. E. May and M. L. McCormack, Jr.
TITLE: Plant response to herbicides in clear cut conifer strips.
SOURCE: Proceedings of the Northeast Weed Science Society.
VOLUME: 36
PAGE(S): 205-208
YEAR: 1982

Plant species composition and abundance were measured in regenerating (4-5 years) clearcut strips in Maine spruce-fir forests prior to, 1 year after, and 3 years after application of varying rates of glyphosate in combination with 2,4-D, and triclopyr. Changes in plant species indices were used to categorize plant response to the herbicides used. The implications of these changes to wildlife use of herbicide-modified clearcut strips are discussed. (Authors' abstract)

Citation Number 166
AUTHOR: Mayer, T. D.
TITLE: An evaluation of chemically-sprayed electric transmission line rights-of-way for actual and potential wildlife use.
SOURCE: In: R.E. Tillman (ed). Proceedings of the First National Symposium, Environmental Concerns in Rights-of-way Management. Mississippi State University.
PAGE(S): 287-294
YEAR: 1976

A wildlife inventory, emphasizing three major game species in each state, was conducted on chemically-maintained rights-of-way in New Hampshire, Georgia, and West Virginia. Plant cover types were evaluated and mapped on 27 plots in the three states. Results indicate that rights-of-way are comparable or superior in wildlife foods to adjacent unsprayed plots. Chemically treated rights-of-way did show greater wildlife use than adjacent old-field habitats. (Author's abstract)

Citation Number 167
AUTHOR: McArthur, L. B.
TITLE: The impact of various forest management practices on passerine community structure.
SOURCE: Ph.D. Dissertation, West Virginia University, Morgantown.
PAGE(S): 129
YEAR: 1980

Six watersheds that had been treated differently were studied in the Fernow Experimental Forest, near Parsons, Tucker Co., West Virginia. Bird communities in recent clearcut areas were sampled during the breeding season for 3 yrs using belt transects through each watershed. ... Herbicide use retards development of a clearcut into forest and consequently causes the bird community to remain as an early successional stage community. ... (Author's abstract)

Citation Number 168
AUTHOR: McCaffery, K. R. and W. A. Creed.
TITLE: Significance of forest openings to deer in northern Wisconsin.
SOURCE: Wisconsin Department of National Resources Technical Bulletin.
VOLUME: 44
PAGE(S): 104
YEAR: 1969

[The role openings play in the summer range ecology of deer in areas where loamy soils predominate is presented. Sections include the influence that forest types and openings have on deer distribution and density, characteristics and deer use of forest openings, and recommendations for designing and implementing openings management programs. The latter section contains recommendations for using herbicides, primarily Tordon, in opening maintenance.]

(KVM abstract)

Citation Number 169
AUTHOR: McCaffery, K. R., F. L. Johnson, and L. D. Martoglio.
TITLE: Maintaining wildlife openings with pellets containing picloram.
SOURCE: Down-To-Earth.
VOLUME: 30
PAGE(S): 1-6
YEAR: 1974

Pellets containing picloram, the active ingredient in TORDON 10K Pellets herbicide, were used to selectively control unwanted woody vegetation in wildlife openings. The pellets were more convenient, economical, and effective than mechanical and liquid herbicide methods used previously. Ease of picloram application has greatly increased the scope of opening maintenance programs in Wisconsin. Broadcast application of picloram for wildlife purposes is not recommended because of the effects on desirable herbs and shrubs.

(Authors' abstract)

Citation Number 170
AUTHOR: McCaffery, K. R., L. D. Martoglio and F. L. Johnson.
TITLE: Maintaining wildlife openings with picloram pellets.
SOURCE: Wildlife Society Bulletin.
VOLUME: 2
PAGE(S): 40-45
YEAR: 1974

Picloram pellets (Tordon 10K) were used to selectively control unwanted woody vegetation in wildlife openings. The pellets were more convenient, economical, and effective than mechanical and liquid herbicide methods used previously. Ease of picloram application has greatly increased the scope of opening maintenance programs in Wisconsin. Broadcast application of picloram for wildlife purposes is not recommended because of the effect on desirable herbs and shrubs.

(Authors' abstract)

Citation Number 171
AUTHOR: McComb, W. C. and R. L. Rumsey.
TITLE: Habitat characteristics of forest clearings created by picloram herbicides and clearcutting.
SOURCE: Proceedings of the Annual Conference of the Southeastern Association of Fish and Wildlife Agencies.
VOLUME: 35
PAGE(S): 174-184
YEAR: 1981

Twenty-six habitat characteristics were quantified on untreated, clearcut, and picloram-treated plots on north-facing, south-facing, and ridgetop sites in eastern Kentucky. ... Herbicide plots were intermediate between untreated and clearcut plots in 15 characteristics. Hard and some soft mast species and browse species were adversely affected by herbicide application. ... Snag abundance and diameter were greatest on rigdetop and south-facing plots receiving 68 kg/ha of TORDON 10K. An application rate of 23 kg/ha of TORDON 10K on south-facing slopes provided 23 habitat characteristics which were equal to or better than untreated plots. (Authors' abstract)

Citation Number 172
AUTHOR: McComb, W. C. and R. L. Rumsey.
TITLE: Response of small mammals to forest clearings created by herbicides in the central Appalachians.
SOURCE: Brimleyana.
VOLUME: 8
PAGE(S): 121-134
YEAR: 1982

Removal trapping was used to determine relative abundance of 6 small mammals species on uncut, clearcut, and herbicide-treated plots on ridgetop, southfacing and northfacing sites in eastern Kentucky. Four rates of picloram-based herbicides were tested. Twenty-nine microsite characteristics were measured at each trap station to determine variables important to capture of each species. ... Relative abundance of Sorex fumeus, Peromyscus leucopus, Ochrotomys nuttalli, and Microtus pinetorum was higher on at least one of the treatments than on untreated plots. ... Relative abundances of Blarina brevicauda and Tamias striatus were unaffected by treatment. ... Changes in structure of overstory and understory, as well as in snag, log, stump and/or rock characteristics, accounted for differential responses of four species to treatments. ...

(Authors' abstract)

Citation Number 173
AUTHOR: McComb, W. C. and R. L. Rumsey.
TITLE: Bird density and habitat use in forest openings created by herbicides and clearcutting in the central Appalachians.
SOURCE: Brimleyana.
VOLUME: 9
PAGE(S): 83-95
YEAR: 1983

Winter and breeding bird communities were sampled on clearcuts, on plots receiving four rates of picloram herbicide application, and on untreated plots. Four-year-old picloram treated plots did not increase bird species diversity, but did increase bird density over untreated plots. Positive response of some bird species to treatment was due to creation of an edge. ... A variety of picloram herbicide treatments (27-68 kg/ha) and clearcutting in small (0.5-1.0 ha) blocks, on both south-facing and north-facing slopes, is recommended to increase bird density and provide more diverse habitat than exists in undisturbed forests.
(Authors' abstract)

Citation Number 174
AUTHOR: McComb, W. C. and R. L. Rumsey.
TITLE: Characteristics and cavity-nesting bird use of picloram-created snags in the central Appalachians.
SOURCE: Southern Journal of Applied Forestry.
VOLUME: 7
PAGE(S): 34-37
YEAR: 1983

A soil-applied herbicide rate of 40 lb/acre TORDON 10K created snags (dead trees) and/or habitat characteristics desirable for foraging and nesting cavity-nesting birds in eastern Kentucky. Integration of picloram pellet application into TSI programs would allow stand quality improvement and a sustained supply of potential feeding and nesting sites for cavity-dependent birds.
(Authors' abstract)

Citation Number 175
AUTHOR: McComb, W. C. and G. A. Hurst.
TITLE: Herbicide and wildlife in southern forests.
SOURCE: In: J.G. Dickson and O.E. Maughan (eds.). Managing Southern Forests for Wildlife and Fish. United States Department of Agriculture, Forest Service, General Technical Report.
VOLUME: S0-65.
PAGE(S): 28-39
YEAR: 1987

A review was conducted of the literature on the direct and indirect effects of herbicide application on forest wildlife. ... Herbicide application alters habitat composition and structure thereby resulting in differential response to herbicide-treated stands by terrestrial vertebrates. Application of herbicides in most southern forest situations may result in short-term changes in the abundance of some terrestrial vertebrates. Herbicide use in mature forest for TSI will promote canopy gaps and understory biomass production, while use in young clearcuts will temporarily reduce understory biomass. Published data describing direct effects of herbicide application on wildlife reproduction and survival and on herpetofaunal response to habitat changes are lacking. [This paper also can be found in the Proceedings of the Society of American Foresters National Convention 1986, 160-168.]
(Authors' abstract)

Citation Number 176
AUTHOR: McCormack, M. L., Jr.
TITLE: Chemical weed control in northeast forests.
SOURCE: J. S. Wright Forestry Conference, Purdue University, West Lafayette, Indiana.
PAGE(S): 108-115
YEAR: 1985

[The use of various herbicidal treatments to control a number of weed species associated with forestry site preparation in the Northeast is discussed. Some wildlife implications are discussed. Herbicides listed include atrazine, 2,4-D, MSMA, picloram, triclopyr, glyphosate, fosamine, and hexazinone.]
(KVM abstract)

Citation Number 177
AUTHOR: McGilvrey, F. B.
TITLE: Effects of elimination of alligator weed on certain aquatic plants and the values of these plants as waterfowl foods.
SOURCE: Proceedings of the Annual Conference of the Southeastern Association of Game and Fish Commissioners.
VOLUME: 18
PAGE(S): 73-79
YEAR: 1967

The effects of elimination of alligatorweed (Alternanthera philoxeroides) by granular silvex on the abundance of 12 species of aquatic plants were studied on the Santee National Wildlife Refuge, Lake Marion, South Carolina, from 1961 to 1964. Three hundred and sixty duck stomachs collected from hunters during the 1961 hunting season were examined to determine the importance of these 12 species as waterfowl food.

(Author's abstract)

Citation Number 178
AUTHOR: McKee, B.
TITLE: Winter deer food production and rabbit utilization of various site preparation treatments.
SOURCE: Proceedings of the Southeastern Association of Game and Fish Commissioners.
VOLUME: 26
PAGE(S): 218-221
YEAR: 1972

The effects of several site preparation treatments [including mistblowing and injecting herbicides] on winter deer food yield and rabbit utilization were studied in one to four year old loblolly pine plantations in Kemper County, Mississippi. Winter deer food availability ranged from 5 - 20 times greater on clearcut and site prepared areas than on the uncut forest. The bedded treatment produced the highest amount of winter food. However, rabbit utilization was much lower on the bedded areas than on the sheared and chopped treatments.

(Author's abstract)

Citation Number 179
AUTHOR: McMurry, S. T., D. M. Engle, R. L. Lochmiller and D. M. Leslie, Jr.
TITLE: Small mammal community responses to brush management in Oklahoma Cross Timbers.
SOURCE: Annual Meeting of the American Society of Mammalogists.
VOLUME: 68
PAGE(S): 178
YEAR: 1988

Influence of brush management on small mammal communities inhabiting post oak (Quercus stellata) - blackjack oak (Q. marilandica) Cross Timbers vegetation type were assessed during summer (June 1986) and winter (Dec. 1986) in Payne Co, Oklahoma. Ten 32.5 ha pastures, representing 2 replications per brush treatment (tebuthiuron and triclopyr herbicides applied with and without annual prescribed burning, and controls), were sampled each season by removal trapping. ... Highest biomass in summer occurred on triclopyr sites and in winter on tebuthiuron sites. Relative population diversity ranged from 0.9 to 1.5 in summer and 0.9 to 1.8 in winter, with highest diversities on tebuthiuron + fire and triclopyr + fire for both seasons. ...
(Authors' abstract)

Citation Number 180
AUTHOR: McPeek, G. A.
TITLE: Decay patterns and bird use of snags created with herbicide injections and tree topping.
SOURCE: M.S. Thesis, University of Kentucky, Lexington.
PAGE(S): 115
YEAR: 1985

Herbicide injection and tree topping were used to create snags in a mixed mesophytic forest in southeastern Kentucky. In 1982, 360 trees (6 taxa) in a 20-ha area were injected with TORDON 101R, and half were topped at a height of 8.8 m. ... Topped and intact trees had similar decay characteristics the first 2 years after treatment. Bark-foraging birds utilized large diameter snags more than small diameter snags, and yellow pine snags (Pinus rigida and P. echinata) more than the other 5 tree species. Winter densities of bark-foraging birds were significantly greater [on the treated area than on the control area]. No nesting or roosting bird cavities were observed in herbicide-created snags the first 2 years. ...
(Author's abstract)

Citation Number 181
AUTHOR: McPeek, G. A., W. C. McComb, J. J. Moriarty and G. E. Jacoby.
TITLE: Bark-foraging bird abundance unaffected by increased snag availability in a mixed mesaphytic forest.
SOURCE: Wilson Bulletin
VOLUME: 99
PAGE(S): 253-257
YEAR: 1987

[The response of bark-foraging birds to increased snag availability created by TORDON 101R injection and topping was studied in Robison Forest, Breathitt County, Kentucky. Trees were treated during summer 1982. Winter and breeding birds were counted in 1981, 1983, 1984, and 1985. Average abundance of winter bark-foraging birds did not increase significantly following treatment on the experimental area relative to the control area. Relative abundance of bark-foragers in the breeding season was not significantly different between the TSI and control area. Increasing snag availability beyond 15 snags per ha may have increased the fitness of bark-foragers by increasing forage efficiency, but it did not result in an increase in bird abundance.]

(KVM abstract)

Citation Number 182
AUTHOR: Miller, H. A.
TITLE: A case for wildlife in hardwood control.
SOURCE: Forest Farmer.
VOLUME: 21
PAGE(S): 5-6
YEAR: 1967

... game habitat can be protected during stand conversion by (1) treating [spraying] only "poor" hardwood sites, (2) retaining natural "good" hardwood sites where terrain permits, and (3) leaving alternate untreated strips of "poor" hardwood where "good" hardwood sites are absent. These minimum requirements should also be looked upon as insurance against possible wildlife damage to the new plantings. Following conversion, management of the new pine forests offers excellent opportunities for a coordinated wildlife and timber program.

(Author's summary)

Citation Number 183
AUTHOR: Miller, K. V., M. D. Whitney, P. B. Bush, and J. W. Taylor.
TITLE: Wildlife habitat redevelopment following Upper Coastal Plain site preparation.
SOURCE: Proceedings of the Southern Weed Science Society.
VOLUME: 42
PAGE(S): 303
YEAR: 1989

Revegetation of a loblolly pine (Pinus taeda) plantation following chemical [picloram @ 2.0 lbs ai/ac + fluroxypyr @ 2.0 lbs ai/ac and hexazinone @ 2.5 lbs ai/ac] and mechanical [rollerchop] site preparation was studied [1yr post-treatment] on an Upper Coastal Plain site in Barnwell County, S.C. ... Grasses, primarily Cynodon dactylon, Panicum spp., and Andropogon sp., were the predominant vegetative type on the chemically treated sites. ... Legumes were more abundant on the hexazinone site...than on the other chemically treated site...or on the mechanical area. ... Forb and woody vegetation production on the roller-chopped area provided abundant forage for white-tailed deer (Odocoileus virginianus). Although total production of forbs and woody vegetation was less on the chemical areas, several preferred forb species were as abundant or more abundant. The hexazinone treated area produced the greatest amount of legumes favored by bobwhite quail (Colinus virginianus). The heavy grass cover on the chemically prepared sites likely favored many rodent species and provided summer foraging sites for wild turkey (Meleagris gallapavo). ...

(Authors' abstract)

Citation Number 184
AUTHOR: Morgan, R. H. and M. L. McCormack, Jr.
TITLE: Simazine enhances balsam fir growth but contributes to deer damage.
SOURCE: Tree Planters Notes.
VOLUME: 24
PAGE(S): 11-13
YEAR: 1973

This study indicates that growth benefits for young balsam firs may perhaps be attained more economically by using the herbicide simazine to control plant competition, as compared to a fertilizer and herbicide combination treatment. ... From the standpoint of wildlife habitat management and buffer food production, the cultural practices that make commercial planting susceptible to damage can be used to enhance the food value of noncommercial trees and plants for wildlife.

(Authors' summary)

Citation Number 185
AUTHOR: Morrison, M. L.
TITLE: Response of avian communities to herbicide-induced vegetation changes, western Oregon.
SOURCE: Ph.D. Thesis, Oregon State University.
PAGE(S): 85
YEAR: 1982

The relationship between avian community structure and herbicide modification of vegetation were analyzed on early-growth clearcuts in western Oregon that had received phenoxy herbicide [2,4-D, 2,4,5-T] treatment 1 or 4 years previously. ... Overall density and diversity of birds were similar between treated and untreated sites. Several bird species altered patterns of foraging behavior on treated sites. Differences in habitat use were identified for several species; ... The substantial shrub cover on treated sites apparently allowed maintenance of an overall avian density similar to that of untreated sites. Small patches of deciduous trees, scattered about on clearcuts treated with phenoxy herbicides can maintain an avian community that is similar to that on untreated sites.
(Author's abstract)

Citation Number 186
AUTHOR: Morrison, M. L. and E. C. Meslow.
TITLE: Impacts of forest herbicides on wildlife; toxicity and habitat alteration.
SOURCE: Transactions of the North American Wildlife and Natural Resources Conference.
VOLUME: 48
PAGE(S): 175-185
YEAR: 1983

[This paper reviews both laboratory and field studies on the possible toxic effects of herbicides on birds and mammals. In addition, the indirect effects of herbicides on wildlife habitat and on the palatability of forages are discussed. Data from a study on effects of herbicides on bird and mammal communities in western Oregon are presented and compared with data available from other geographic regions.]
(KVM abstract)

Citation Number 187
AUTHOR: Morrison, M. L. and E. C. Meslow.
TITLE: Effects of the herbicide glyphosate on bird community structure, western Oregon.
SOURCE: Forest Science.
VOLUME: 30
PAGE(S): 95-106
YEAR: 1984

A study was conducted on vegetative changes induced by the herbicide glyphosate, and the resultant habitat use of birds nesting on two clearcuts in western Oregon. ... No differences in density of the bird community was evident between treated and untreated sites during all years of study although individual species densities were modified. Several bird species decreased their use of shrub cover, and increased their use of deciduous trees 1 year after treatment. By 2 years post-spray, many species had returned to pre-spray use of most measured habitat components. Results indicated that application of glyphosate can modify the density and habitat use of birds.

(Author's abstract)

Citation Number 188
AUTHOR: Morrison, M. L. and E. C. Meslow.
TITLE: Response of avian communities to herbicide-induced vegetation changes.
SOURCE: Journal of Wildlife Management.
VOLUME: 48
PAGE(S): 14-22
YEAR: 1984

The relationships between avian communities and herbicide modification of vegetation were analyzed on early-growth clear-cuts in western Oregon that had received phenoxy herbicide treatment [2,4-D or 2,4,5-T] 1 or 4 years previously. ... Overall density and diversity of birds were similar between treated and untreated sites. Several bird species altered their foraging behavior on treated sites; i.e., birds using deciduous trees increased use of shrubs on treated sites. The primary effect of herbicide application was a reduction in the complexity of vegetation, a condition due primarily to the removal of deciduous trees. Small patches of deciduous trees scattered in clear-cuts treated with phenoxy herbicides can maintain an avian community similar to that on untreated sites.

(Authors' abstract)

Citation Number 189
AUTHOR: Mueggler, W. F.
TITLE: Herbicide treatment of browse on a big-game winter range in northern Idaho.
SOURCE: Journal of Wildlife Management.
VOLUME: 30
PAGE(S): 141-151
YEAR: 1966

2,4-D, 2,4,5-T, and a mixture of these two chemicals were tested for effectiveness in lowering the live crown and increasing the basal sprouting of browse grown beyond the reach of elk and deer. ... The mixture of 3 lb/ac was most effective in killing aerial crowns. ... Species differed considerably in reaction to date of spraying. Early summer and late summer spraying were usually more effective than midsummer spraying; however, the study revealed no seasonal pattern that could be used as a general guide for spraying to achieve optimum effectiveness in browse rehabilitation. Limitations governing present use of these herbicides for browse improvement in nothern Idaho should be noted carefully. Only cautious use of spraying is proposed.

(Author's abstract)

Citation Number 190
AUTHOR: Mullison, W. R.
TITLE: Ecological effects of herbicides.
SOURCE: Down-To-Earth.
VOLUME: 28
PAGE(S): 21-24
YEAR: 1972

[This paper provides some generalizations about the ecological behavior of herbicides including the impact of volatility and drift, actions in the soil, degradation of herbicides, and the effect of herbicides on water, fish, and wildlife. Ecologically, the main effect of herbicides from the wildlife viewpoint is their altering the environment through the control of certain plant species; this brings about changes in the food and habitat for wildife. The longterm effect on wildlife may be beneficial or detrimental, depending on the species involved.]

(KVM abstract)

Citation Number 191
AUTHOR: Murray, R. B.
TITLE: Response of antelope bitterbrush to burning and spraying in southeastern Idaho.
SOURCE: Proceedings - Research and Management of Bitterbrush and Cliffrose in Western North America. USDA Forest Service, General Technical Report.
VOLUME: INT-152
PAGE(S): 142-152
YEAR: 1983

[Antelope bitterbrush (Purshia tridentata Pursh. DC) is a highly preferred species for big game on winter ranges in the Western United States. Long-term response (1936-1979) of bitterbrush is reported for an August 1936 prescribed burn and an accidental 2,4-D spray in 1961. On unburned plots bitterbrush yields in 1966 were more than twice those on burned plots. Spraying with 2,4-D in 1961 resulted in relatively large increases in bitterbrush yields in 1969. ... Big sagebrush studies on spring and late summer burning are included.]

(KVM abstract)

Citation Number 192
AUTHOR: Newton, M.
TITLE: Constructive use of herbicides in forest resource management.
SOURCE: Journal of Forestry.
VOLUME: 73
PAGE(S): 329-336
YEAR: 1975

Herbicide-based methods have come into use as partial or full substitutes for tools long used in timber stand establishment and management. Some are effective and economical, offering a way to improve resource productivity. Yet their environmental impacts are being questioned in much greater detail than were the practices they replace. This article describes some of the practices and examines some of the questions regarding the relative impacts [on forest systems, including wildlife and wildlife habitat] of some analogous chemical and nonchemical methods. The choice of methods is considered as an active process that takes into account both the advantages and disadvantages of each option in management and social contexts.

(Author's abstract)

Citation Number 193
AUTHOR: Newton, M. and L. A. Norris.
TITLE: Evaluating short- and long-term effects of herbicides on nontarget forest and range biota.
SOURCE: Down-To-Earth.
VOLUME: 32
PAGE(S): 18-26
YEAR: 1976

[Herbicide effects on nontarget plants and animals are discussed including analysis of short-term chemical effects, effects of herbicides on animals, effects of herbicides on plants, the interaction between plants and animals, and analysis of long-term effects.]

(KVM abstract)

Citation Number 194
AUTHOR: Newton, M., E. C. Cole, R. A. Lautenschlager, D. E. White, and M. L. McCormack, Jr.
TITLE: Browse availability after conifer release in Maine's spruce-fir forests.
SOURCE: Journal of Wildlife Management.
VOLUME: 53
PAGE(S): 643-649
YEAR: 1989

Even aged management in northern spruce (Picea spp.)-fir (Abies spp.) forest types may result in significant production of fine woody vegetation <2.5 m tall (i.e., available to browsers) for >10 years after cutting. ... August application of glyphosate or triclopyr and/or phenoxy herbicides 7 years after winter "clearcut" harvest reduced the cover of tall hardwoods and caused a 4- to 8-fold increase in available browse. Nearly all plant species present before herbicide treatment remained >9 years later, but browse available after treatment included a higher proportion of sun-grown foliage and twigs than was found in untreated control plots. Spacing in conifer stands by planting or precommercial thinning should prolong the period of browse availability to >20 years. [Their] data indicate that intensive management designed to increase forest crop production in northeastern spruce-fir ecosystems also dramatically improves conditions for resident browsers.

(Authors' abstract)

Citation Number 195
AUTHOR: Niering, W. A.
TITLE: Principles of sound right-of-way vegetation management.
SOURCE: Economic Botany.
VOLUME: 12
PAGE(S): 140-144
YEAR: 1958

Right-of-ways occupy a vast acreage of our landscape where vegetation management is necessary. On these areas indiscriminate use of chemical weed killers is widespread even with sound ecological techniques readily available. The application of sound management would not only benefit the utility with reduced costs on a long-range basis but also result in high conservation values to the nation. [Management techniques, including herbicides, are presented that may enhance wildlife habitat on right-of-ways.] (Author's abstract)

Citation Number 196
AUTHOR: Niering, W. A. and R. H. Goodwin.
TITLE: Creation of relatively stable shrublands with herbicides: arresting "succession" on rights-of-way and pastureland.
SOURCE: Ecology.
VOLUME: 55
PAGE(S): 784-795
YEAR: 1974

Two decades of selective-herbicide management [2,4,5-T] on a demonstration right-of-way within the Connecticut Arboretum has resulted in a mosaic of relatively stable shrub communities and less stable herblands within the central hardwoods forest region. ... Creating relatively-stable shrub communities by the selective use of herbicides has practical applications in right-of-way and wildlife habitat management, naturalistic landscaping, and the maintenance of habitat diversity. (Authors' abstract)

Citation Number 197
AUTHOR: Niering, W. A. and R. H. Goodwin.
TITLE: Creation of relatively stable shrublands with herbicides: arresting "succession" on rights-of-way and pastureland.
SOURCE: Down-To-Earth.
VOLUME: 31
PAGE(S): 26-32
YEAR: 1975

This paper is a condensation of Niering and Goodwin (1974).

Citation Number 198
AUTHOR: Oliveri, S. F.
TITLE: The implications of intensive forest management practices for wildlife in Maine.
SOURCE: In: J. A. Bissonette (ed.). Is good forestry good wildlife management? Maine Agricultural Experiment Station, Miscellaneous Publication.
VOLUME: 689
PAGE(S): 259-267
YEAR: 1986

The effects of 10 intensive forest management practices upon wildlife are reviewed. Herbicides, shorter rotations, road development, clearcutting, whole-tree and biomass harvesting, hardwood utilization and stand conversion, thinning, planting, fire control, and insecticides are prominent practices that have both positive and negative effects upon different wildlife species. (Author's abstract)

Citation Number 199
AUTHOR: Osaki, S. K.
TITLE: An assessment of wildlife populations and habitat in herbicide-treated Jeffrey pine plantations.
SOURCE: M.S. Thesis, University of California, Berkeley.
PAGE(S): 83
YEAR: 1979

In the summers of 1977 and 1978 wildlife populations and habitat variables were sampled within young Jeffrey pine plantations in the 1960 Donner burn. Sites treated with 2,4,5-T 6 to 7 years prior to sampling were compared with similar untreated sites. ... No significant differences in small mammal abundance were detected although 7 of 9 species seemed to be favored by untreated habitat. Deer (Odocoileus hemionus) use appeared to be slightly greater on treated sites while snowshoe hare (Lepus americanus) use was lower on treated sites. Avian populations appeared to be more sensitive to the measured differences in habitat variables. ... The habitat variables and animal populations were consequently more variable on treated than untreated sites. In contrast to a previous study of the area which sampled only one heavily treated site, this study found no severe impacts to wildlife...6 to 7 years post-treatment. ... (Author's abstract)

Citation Number 200
AUTHOR: Perkins, C. J.
TITLE: Effects of clearcutting and site preparation on the vegetation and wildlife in the flatwoods of Kemper County, Mississippi.
SOURCE: Ph. D. Dissertation, Mississippi State University.
PAGE(S): 326
YEAR: 1973

[The objective of this study was to compare the floristic composition in an uncut forest, and in clearcuts that were site prepared either by shearing, windrowing, burning, and bedding or by mistblowing herbicides. Avifauna and small mammal populations are described for each treatment. Site preparation vastly improved the environment for most species.]
(KVM abstract)

Citation Number 201
AUTHOR: Pletscher, D. H. and R. J. Robel.
TITLE: Possible use of 2,4-D in management of sunflower and ragweed.
SOURCE: Wildlife Society Bulletin.
VOLUME: 7
PAGE(S): 48-53
YEAR: 1979

[The effects of low levels of 2,4-D on subsequent seed composition and production of sunflower (Helianthus annuus) and ragweed (Ambrosia artemisiifolia) plants was studied on Fort Riley Military Reservation, Kansas. Results indicate that low dosages of 2,4-D may increase sunflower seed production. These preliminary results suggest that low-level applications of synthetic auxins could be a beneficial tool in bobwhite quail management.]
(KVM abstract)

Citation Number 202
AUTHOR: Quimby, D. C.
TITLE: A review of literature relating to the effects and possible effects of sagebrush control on certain game species in Montana.
SOURCE: Proceedings of the Annual Conference of the Western Association of State Game and Fish Commissioners.
VOLUME: 46
PAGE(S): 142-149
YEAR: 1966

[The author suggests that relationships between certain wildlife species and the occurrence of sagebrush and related plants are so intricate that any program that removes sagebrush and related forbs can be viewed potentially damaging to the welfare of these wildlife species until proven otherwise. The author presents some specific information concerning the food habits of certain wildlife species to justify this conclusion. The species include pronghorn antelope, sage grouse, mule deer, elk, white-tailed deer, moose, and bighorn sheep. Herbicide discussed is 2,4-D.]
(KVM abstract)

Citation Number 203
AUTHOR: Reitzel, J. A.
TITLE: The effects of brush control on bird populations in mesquite community.
SOURCE: M. S. Thesis, New Mexico State University, Las Cruces.
PAGE(S): 55
YEAR: 1982

This study dealt with the effects that brush control, by aerial application of 2,4,5-T had on indigenous bird populations in a mesquite community in southern New Mexico. ... Species richness was greater in the unsprayed area in the duny subtype, but was approximately equal in sprayed and unsprayed areas in the flats. Dominance composition differed little between treatment areas. ... The evidence for an effect on bird diversity was weak, but may indicate a lower diversity in the sprayed duny mesquite. ... In conclusion, it appears that mesquite control has a detrimental effect on populations of some bird species. These differences are more pronounced in the first year of study, possibly because of the mesquite regrowth which occurred the following year.
(Author's abstract)

Citation Number 204
AUTHOR: Ritchie, D. C., A. S. Harestad and R. Archibald.
TITLE: Glyphosate treatment and deer mice in clearcut and forest.
SOURCE: Northwest Science.
VOLUME: 61
PAGE(S): 199-202
YEAR: 1987

Prior to planting conifers, herbicides are commonly used to reduce competition from deciduous trees and shrubs. Herbicides are usually not toxic to wildlife but do affect their habitats. [The authors] examined deer mice (Peromyscus maniculatus) to assess the impact of herbicides on small mammals. Deer mice from adjacent untreated and glyphosate-treated clearcuts had similar body sizes and numbers of placental scars and foeti. In untreated clearcut, deer mice were more abundant than in treated clearcut, but were less abundant than in surrounding old growth forest. Glyphosate altered vegetation and reduced density of deer mice in young seral stages. Habitat changes induced by glyphosate likely modified abundance and quality of food and cover for small mammals.
(Authors' abstract)

Citation Number 205
AUTHOR: Roe, E. T.
TITLE: Possibilities of aerial spraying in forest management in the Lake States.
SOURCE: Proceedings of the North Central Weed Control Conference.
VOLUME: 12
PAGE(S): 109-112
YEAR: 1955

[The use of aerial applications of 2,4,5-T in the Lake States for forest management is discussed. Plantation release, preparation of brushy sites for planting, conversion of low-grade aspen to conifers, encouraging conifer reproduction on brushy land and creating conditions favorable for wildlife through the use of herbicides are reviewed.]
(KVM abstract)

Citation Number 206
AUTHOR: Rollings, C. T.
TITLE: Use of herbicides in the improvement of marsh habitat for waterfowl on national wildlife refuges in the Upper Midwest States.
SOURCE: Proceedings of the North Central Weed Control Conference.
VOLUME: 16
PAGE(S): 41
YEAR: 1959

[Numerous herbicides were evaluated on national wildlife refuges in the north central United States to create openings in solid stands of vegetation for waterfowl. Herbicides tested included ureabor, erbon, amitrol, and dalapon. The author concludes that herbicides will serve as a valuable supplement to more conventional techniques for controlling marsh vegetation on national wildlife refuges in the north central states.]
(KVM abstract)

Citation Number 207
AUTHOR: Ruch, L. C.
TITLE: Creating and maintaining openings in wood areas by the use of herbicides.
SOURCE: Proceedings of the North Central Weed Control Conference.
VOLUME: 13
PAGE(S): 28-29
YEAR: 1956

[Maintenance of favorable wildlife on game lands was attempted using 2,4-D and/or 2,4,5-T. Herbicides were found to be valuable in treating open fields, woodland edge, trails, and solid stands of low-growing vegetation to improve habitat for rabbits, ruffed grouse, sharp-tailed grouse and deer.]
(KVM abstract)

Citation Number 208
AUTHOR: Ruch, L. C.
TITLE: Creating and maintaining wildlife openings in wooded areas by use of herbicides.
SOURCE: Down-To-Earth.
VOLUME: 12
PAGE(S): 2-3, 16
YEAR: 1957
See Ruch (1956)

Citation Number 209
AUTHOR: Santillo, D. J.
TITLE: Glyphosate and wildlife habitat in Maine.
SOURCE: Proceedings of the Northeastern Weed Science Society.
VOLUME: 40
PAGE(S): 25
YEAR: 1986
... Effects of glyphosate induced habitat changes on songbirds and small mammals are being examined on 1-, 2-, and 3-year post-treatment clearcuts. ... Both songbirds and small mammals were less abundant on 2-year post-treatment sites than on untreated control sites. "Skip" areas, or areas missed during treatment, appear to be important in maintaining the diversity of the bird community on treated clearcuts. The difference in total captures of small mammals on untreated and 2-year post-treatment sites was primarily due to disparity in captures of masked shrews (Sorex cinereus). ...
(Author's abstract)

Citation Number 210
AUTHOR: Santillo, D. J.
TITLE: Response of small mammals and breeding birds to herbicide-induced habitat changes on clearcuts in Maine.
SOURCE: M. S. Thesis, University of Maine.
PAGE(S): 74
YEAR: 1987
The effects of herbicide-induced habitat changes on small mammals and songbirds were investigated in north-central Maine during 1985 - 86. Changes in small mammal and songbird populations were compared to differences in vegetation on untreated and herbicide-treated clearcuts, 1 to 3 yrs after application of herbicides [glyphosate] for conifer release. ... Fewer small mammals were captured on herbicide-treated clearcuts than on untreated clearcuts for all 3 yrs post-treatment. ... Differences in small mammal populations were explained by a reduction of invertebrate and plant food on herbicide-treated sites, and the herbicide-induced reduction in cover. ... Total bird densities were lower on herbicide-treated clearcuts ($P<0.05$). ... The influence of site tenacity and time lag in response of birds to the habitat alteration were discussed. Pockets of vegetation missed during application of herbicides (skips) were found to be important as a source of cover and food. ...
(Author's abstract)

Citation Number 211
AUTHOR: Santillo, D. J., D. M. Leslie, Jr., and P. W. Brown.
TITLE: Response of small mammals and habitat to glyphosate application on clearcuts.
SOURCE: Journal of Wildlife Management.
VOLUME: 53
PAGE(S): 164-172
YEAR: 1989

[The authors] investigated effects of herbicide-induced habitat changes on small mammals in clearcuts in northcentral Maine. Fewer small mammals were captured on glyphosate...treated clearcuts 1-3 years post-treatment compared to untreated clearcuts. Insectivores (Soricidae) comprised 72% of small mammal captures and were less abundant ($P<0.001$) for all three years post-treatment. Herbivores (Microtinae) were less abundant 1 ($P<0.01$) and 2 years ($P<0.001$) post-treatment. Omnivores (Cricetinae and Zapodidae) were equally abundant on treated and untreated clearcuts. Differences in small mammal abundance paralleled herbicide-induced reductions in invertebrates and plant food and cover. Patches of untreated vegetation within herbicide-treated clearcuts provided a source of invertebrates and plant food and cover.

(Authors' abstract)

Citation Number 212
AUTHOR: Santillo, D. J., P. W. Brown, and D. M. Leslie.
TITLE: Response of songbirds to glyphosate-induced habitat changes in clearcuts.
SOURCE: Journal of Wildlife Management.
VOLUME: 53
PAGE(S): 64-71
YEAR: 1989

[The authors] examined breeding bird populations and habitats on glyphosate ... treated and untreated clearcuts in north-central Maine. Treatment of clearcuts with glyphosate herbicide reduced the complexity of vegetation through 3 years post-treatment compared to untreated clearcuts. Total numbers of birds, common yellowthroats (Geothlypis trichas), Lincoln's sparrows (Melospiza lincolnii), and alder flycatchers (Empidonax alnorum) were less abundant ($P<0.05$) on treated clearcuts than on untreated clearcuts. Songbird densities were correlated with habitat complexity, especially hardwood regeneration, foliage height diversity, and vegetation height. Leaving untreated patches of vegetation and staggering herbicide treatments on large clearcuts will maintain bird populations similar to those on untreated clearcuts.

(Authors' abstract)

Citation Number 213
AUTHOR: Savidge, J. A.
TITLE: Effects on wildlife of herbicide induced habitat change, Tahoe National Forest.
SOURCE: M.S. Thesis, University of California, Berkeley.
PAGE(S): 16
YEAR: 1977

[This] study was designed to compare vegetation and animal populations on a plot sprayed with [2,4,5-T] six years previously with a similar unsprayed plot. Herbicide spraying ... induced changes in shrubby vegetation which depressed nesting bird populations and summering mule deer populations but stimulated an increase in some rodents. Although this was only a pilot study, the results raise some serious questions concerning environmental effects of herbicides, suggesting the need for further investigation.
(Author's summary)

Citation Number 214
AUTHOR: Savidge, J. A.
TITLE: Wildlife in a herbicide-treated Jeffrey pine plantation in eastern California.
SOURCE: Journal of Forestry.
VOLUME: 76
PAGE(S): 476-478
YEAR: 1978

In a plantation of Jeffrey pine (Pinus jeffreyi) Grev. and Balf.), spraying with 2,4,5-T thinned some brush species (Ceanothus velutinus Dougl. in particular) while encouraging others. The change in vegetation substantially reduced populations of resident birds, both in numbers of individuals and species. Mule deer likewise were reduced in number on the sprayed area. Conversely, some small mammals, particularly chipmunks, increased.
(Author's abstract)

Citation Number 215
AUTHOR: Schemnitz, S. D. and W. R. Byrnes.
TITLE: Wildlife utilize power line rights-of-way.
SOURCE: Science for the Farmer.
VOLUME: 10
PAGE(S): 3
YEAR: 1963

[A right-of-way in Center Co., Pennsylvania was treated in 1953 with basal or broadcast sprays of either 2,4-D, 2,4,5-T, or Ammate to determine the effects of herbicide application on wildlife habitat. After 9 years of regrowth, power line rights-of-way treated with herbicides remained atractive to deer, rabbits, wild turkey, and ruffed grouse. Wildlife usage of study plots in 1962 equalled or exceeded the rate of usage found on these same areas in 1954, one year after chemical treatment.]
(KVM abstract)

Citation Number 216
AUTHOR: Schemnitz, S. D.
TITLE: The effects of forest management practices on wildlife in eastern United States.
SOURCE: Proceedings of the IUFRO World Congress.
VOLUME: 16
PAGE(S): 700-730
YEAR: 1976

A review was made of current forest management practices in eastern United States as they influence wildlife populations. Emphasis was placed on the role of timber harvest and intermediate silvicultural treatments (timber stand improvement). Other forest practices that were evaluated included stand conversion and type rehabilitation, artificial reforestation, forest openings, controlled burning, forest fertilization, forest range management, green tree resevoirs, and chemical applications (herbicides, pesticides, and chemical debarking). Response of non-game birds, raptors, forest grouse, and wild turkey and endangered woodpeckers to particular forest management practices were discussed. Mammalian species groups receiving detailed consideration were large herbivores and bear, furbearers, and forest rodents.
(Author's summary)

Citation Number 217
AUTHOR: Schroeder, M. H.
TITLE: Relationships of range and forest management with herbicides on wildlife.
SOURCE: Proceedings of the Western Weed Science Society.
VOLUME: 25
PAGE(S): 11-15
YEAR: 1972

[A review of the literature on the direct and indirect effects of herbicide vegetation management on ranges and forests on wildlife is presented. The author concludes that] herbicides have many uses that benefit wildlife, but it will be remembered that as with any pesticide tool, the herbicidal swords have two edges; one to benefit, the other can harm. To derive the benefit from herbicide use, land managers must work within the multiple use concept and consider wildlife, both game and nongame, when planning vegetal control programs.
(KVM abstract)

Citation Number 218
AUTHOR: Schroeder, M. H. and D. L. Sturges.
TITLE: The effect on the Brewer's sparrow of spraying big sagebrush.
SOURCE: Journal of Range Management.
VOLUME: 28
PAGE(S): 294-297
YEAR: 1975

Three sagebrush plants containing Brewer's sparrow nests with eggs were sprayed with 2,4-D. Comparison of these to three nests in unsprayed brush showed no evidence that the herbicide spray reduced nest success during the year of application. Brewer's sparrow use of a sprayed sagebrush stand 1 and 2 years after spraying was 67% and 99% lower, respectively, than use on an unsprayed stand, and no evidence of nesting was found on the sprayed stand.
(Authors' abstract)

Citation Number 219
AUTHOR: Scifres, C. J. and J. L. Mutz.
TITLE: Herbaceous vegetation changes following applications of tebuthiuron for brush control.
SOURCE: Journal of Range Management.
VOLUME: 31
PAGE(S): 375-378
YEAR: 1978

Aerial application of 2.24 kg/ha (a.i.) of tebuthiuron pellets to mixed brush and whitebrush-dominated stands in South Texas significantly increased grass standing crops at 1, 2, and 3 years after treatment. ... Forb production and diversity were decreased where 1 kg/ha or more of the herbicide was applied, and the detrimental effect on forbs increased with increasing application rate. Forb production was nearly eliminated for 2 years following application of 4.48 kg/ha of tebuthiuron but recovery of the population was evident after 3 years regardless of rate of application. [To assure an adequate forb population for white-tailed deer, a patterned application would be advisable.]
(Authors' abstract)

Citation Number 220
AUTHOR: Scifres, C. J.
TITLE: Range vegetation management with herbicides and alternative methods: an overview and perspective.
SOURCE: In: D.E. Ketcham (ed.). The Use of Herbicides in Forestry. United States Department of Agriculture, Washington, D.C.
PAGE(S): 151-165
YEAR: 1978

Undesirable vegetation and its management on rangeland is an ecological problem that must be considered within a rather narrow economic framework. ... Herbicides can be used to promote range livestock production without being detrimental and, in some cases, may be beneficial to quality wildlife habitat. Recognition of potential hazards to wildlife habitat allows planning applications to eliminate detriment to most game species. ...
(Author's summary)

Citation Number 221
AUTHOR: Scifres, C. J. and B. H. Koerth.
TITLE: Habitat alterations in mixed brush from variable rate herbicide patterns.
SOURCE: Wildlife Society Bulletin.
VOLUME: 14
PAGE(S): 345-356
YEAR: 1986

Structural and botanical features of mixed-brush landscapes in south Texas were evaluated after aerial application of tebuthiuron in variable rate patterns (VPRs) [0, 1.1, 2.2, 3.3, and 4.4 kg/ha]. ... Forb cover and diversity were a function of the interaction of herbicide dosage with range site and rainfall. ... VPRs are proposed as viable alternatives to strip patterning of herbicide applications because the patch effect offers a highly diverse vegetation mosaic over the landscape and an asymmetry which amplifies edge effect. ... The versatility of pattern design allows development of carefully planned VRPs to optimize livestock and wildlife management goals.
(Authors' abstract)

Citation Number 222
AUTHOR: Segelquist, C. A., M. J. Rogers and F. D. Ward.
TITLE: Response of Japanese honeysuckle to management in the Arkansas Ozarks.
SOURCE: Proceedings of the Annual Conference of the Southeastern Game and Fish Commissioners.
VOLUME: 29
PAGE(S): 370-373
YEAR: 1976

Honeysuckle planted in 1968 [for wildlife habitat improvement] consistently yielded more than 2,000 kg of leaves and twigs per ha after 1972. Fertilization with N subsequently increased total vegetative yields and crude protein content of leaves. ... Despite high yields, there was evidence that an effective means of weed control would be necessary to prevent woody species from eventually suppressing the honeysuckle. Mowing was not sufficient control, and spraying with 2,4,5-T killed honeysuckle as well as native woody species.
(Authors' abstract)

Citation Number 223
AUTHOR: Shipman, R. D. and J. B. Schmitt.
TITLE: Timber, wildlife improved with fenuron herbicide.
SOURCE: Science in Agriculture.
VOLUME: 19
PAGE(S): 2-5
YEAR: 1971

[Experiments indicated that undesirable vegetation can be successfully controlled with fenuron herbicide. Defoliation and killing of 'weed' trees improved survival and growth rate of underplanted Japanese Larch seedlings, and increased production of ground vegetation well-suited for wildlife food and cover.]
(KVM abstract)

Citation Number 224
AUTHOR: Short, H. L. and C. Y. McCulloch.
TITLE: Managing pinyon-juniper ranges for wildlife.
SOURCE: United States Department of Agriculture, Forest Service, General Technical Report.
VOLUME: RM-47.
PAGE(S): 10 pp.
YEAR: 1977

[Effects of various pinyon-juniper range management practices, including use of herbicides, on wildlife species is discussed. The authors caution that the possibility of destroying midstory shrubs important as food sources, and the esthetically distasteful appearance of dead snags are major disadvantages to herbicide use. Perhaps the greatest disadvantage, however, is the danger that the gross misuse of chemicals might destroy rather than manage a forest type that is important to wildlife in the United States.]
(KVM abstract)

Citation Number 225
AUTHOR: Slagsvold, T.
TITLE: Bird population changes after clearance of deciduous scrub.
SOURCE: Biological Conservation.
VOLUME: 12
PAGE(S): 229-244
YEAR: 1977

Clearance of deciduous scrub by cutting in Valdres, South Norway, or by spraying with 2,4,5-T, was followed by a 30% reduction in the number of bird territories in the following spring. The recorded changes were related to differing preferences of the bird species for successional stages of vegetation, i.e. the pioneer species increased while those which prefer old forest were heavily reduced. Four years later the bird population as a whole had increased in the cut area, but not in the sprayed area. The results are discussed in relation to changes in the invertebrate fauna and the vegetation of the habitat. ...
(Author's abstract)

Citation Number 226
AUTHOR: Soper, R. B., R. L. Lochmiller, D. M. Leslie, Jr., and D. M. Engle.
TITLE: White-tailed deer movements and browse quality as influenced by brush management.
SOURCE: Annual Meeting of the Southeast Deer Study Group, Oklahoma City.
VOLUME: 12
PAGE(S): 19
YEAR: 1989

... [The] objective was to monitor deer movement patterns, habitat selection, and browse quality on the Cross Timbers Experimental Range (CTER) near Stillwater, Oklahoma. The CTER is a 650-ha research area divided up into 20 32.5-ha herbicide treated (tebuthiuron and triclopyr herbicides with or without prescribed burning and untreated control) pastures with 4 replications of each treatment. Eleven [deer] were captured, fitted with transmitters, and monitored throughout 1988 to determine home range size and daily movement patterns and responses to experimental treatments. Seven common browse species were collected throughout 1988 from 2 replications and analyzed for crude protein. Deer movement data indicated home range sizes were relatively small. Brush control treatments also influenced quality of key browse plants of white-tailed deer.

(Authors' abstract)

Citation Number 227
AUTHOR: Sosebee, R. E., and B. E. Dahl.
TITLE: Effects of mesquite spraying on other rangeland resources.
SOURCE: United States Department of the Interior, Bureau of Land Management, Technical Note.
VOLUME: 341
PAGE(S): 387
YEAR: 1980

[The authors provide a comprehensive review of the literature pertaining to the pertinent scientific research on the effect of all herbicides used in spraying mesquite (Prosopis spp). Effects on other resources such as watershed values, associated vegetative composition, wildlife habitat, livestock forage production,and aesthetic values of spraying are reported. Wildlife habitat is subdivided into antelope and other big game, upland game birds, birds of prey, other birds, predators, rodents, reptiles, fish, and amphibians.]

(KVM abstract)

Citation Number 228
AUTHOR: Soutiere, E. C. and E. G. Bolen.
TITLE: Mourning dove nesting on tobosa grass-mesquite rangeland sprayed with herbicides and burned.
SOURCE: Journal of Range Management.
VOLUME: 29
PAGE(S): 226-231
YEAR: 1976

A 2-year study of the effects herbicide spraying, and particularly prescribed burning might have on mourning dove (Zenaida macroura) nesting ecology in rangelands infested with mesquite revealed that the loss of trees as nesting sites was compensated by the occurrence of ground nesting. Newly burned areas fostered better utilization (i.e., higher nesting densities) than did older burns except under drought conditions. Ground nests did not suffer from excessive predation, and differences in the productivity of ground nests probably were related to nesting density rather than to the apparent suitability of the site. Ground nests were more successful than tree nests.
(Authors' abstract)

Citation Number 229
AUTHOR: Spencer, S. R. and G. W. Barrett.
TITLE: Meadow vole population response to vegetational changes resulting from 2,4-D application.
SOURCE: American Midland Naturalist.
VOLUME: 103
PAGE(S): 32-46
YEAR: 1980

The effects of a herbicide (2,4-D) on the small mammal component of an old-field community were investigated. The study area consisted of two 0.4-ha plots surrounded by...walls, into which 7 pairs of meadow voles (Microtus pennsylvanicus) were introduced. An amount equal to 567.5 g/ha of...2,4-D, mixed in 151.4 liters of water, was applied to 1 of the experimental plots... Meadow vole population dynamics were monitored by trapping twice weekly... The control plot reached a peak density of 116 animals/0.4 ha...the treated plot reached a peak density of 68 voles/0.4 ha... Male:female sex ratios were skewed in favor of males in the treated grid, mainly because of reduced female survival rates. ... It appears that voles in the treated grid, which became essentially a 'monoculture type' giant foxtail (Setaria faberii) habitat, were subjected to food quality differences (e.g., protein deficiencies) as compared to voles in the more diverse untreated habitat.
(Authors' abstract)

Citation Number 230
AUTHOR: Stamm, K.
TITLE: Use of herbicides in forestry and game management.
SOURCE: University of Wisconsin Agriculture Extension Service.
PAGE(S): 126
YEAR: 1964

[Recommendations on herbicide types, rates, and timing of application for game wildlife habitat improvement (food patch establishment, removal of undesirable vegetation, etc.) are provided. Chemical discussed include simazine, dalapon, 2,4-D, and 2,4,5-T.]

(KVM abstract)

Citation Number 231
AUTHOR: Steenis, J. H.
TITLE: Studies on the use of herbicides for improving waterfowl habitat in western Kentucky and Tennessee.
SOURCE: Journal of Wildlife Management.
VOLUME: 14
PAGE(S): 162-168
YEAR: 1950

During four years of investigation on the use of herbicides to control pest plants in waterfowl habitat in western Kentucky and Tennessee, it was found that: 1) Ammate at 0.75 lb/gal and 2,4-D at 0.6% strength [are] effective on many plants, including important pest species such as lotus, giant cutgrass, and several woody species. ... 2) For non-hormone types of chemicals, such as Ammate, best results are [obtained] when treatment causes maximum shock to the plant. 3) Best results with the hormone-type herbicide, such as 2,4-D, were obtained during active vegetative growth... 4) Successive treatments of 2,4-D and Ammate...were used on hard-to-kill woody sucker growth. 5) Effective application of herbicides in waterfowl areas requires procedures that will result in economical replacement of objectionable vegetation by more desirable plants.

(Author's summary)

Citation Number 232
AUTHOR: Steenis, J. H.
TITLE: Waterfowl habitat improvement on Reelfoot Lake.
SOURCE: Journal of the Tennessee Academy of Science.
VOLUME: 15
PAGE(S): 56-64
YEAR: 1950

[Techniques used to improve waterfowl habitat on Reelfoot Lake in Tennessee are discussed. Herbicides (2,4-D, ammate, Altacide, and sodium chlorate) are used for vegetation improvement to control numerous woody and herbaceous undesirable weeds.]

(KVM abstract)

Citation Number 233
AUTHOR: Steenis, J. H.
TITLE: Aquatic weed control.
SOURCE: In: R.E. McDermott and W.R. Byrnes (eds.). Herbicides and Their Use in Forestry. School of Forestry, Pennsylvania State University.
PAGE(S): 33-39
YEAR: 1960

Control of problem plants is becoming one of the major means of improving marshes for waterfowl and other wildlife. Since many of the problem plants of wet areas are perennials that show varied reactions to herbicides, it often is necessary to develop specific control procedures for each species. Methods are described for controlling phragmites, cattails, needlerush, waterchestnut, and waterhyacinth. Results of preliminary studies are described for alligatorweed and Eurasian watermilfoil. [Herbicides included are 2,4-D, MCPA, silvex, amitrol, and dalapon.]

(Author's summary)

Citation Number 234
AUTHOR: Steenis, J. H. and J. Warren.
TITLE: Management of needlerush for improving waterfowl habitat in Maryland.
SOURCE: Proceedings of the Annual Conference of the Southeastern Association of Game and Fish Commissioners.
VOLUME: 13
PAGE(S): 296-298
YEAR: 1969

Needlerush, one of the most prominent plants of the southern coastal marshes, dominates an area of about 600,000 acres. Studies in Maryland showed that derivatives of 2,4-D, particularly 2,4-D acetamide, provide the most effective, economical control. Continuous flooding of treated areas prevents reinvasion of needlerush. Marshes dominated by needlerush can be improved for waterfowl by flooding and herbicidal treatments that create an interspersion of marsh and open water suitable for the growth of submerged food plants.

(Authors' summary)

Citation Number 235
AUTHOR: Steuter, A. A.
TITLE: Response of wildlife to brush control in the Rio Grande Plain.
SOURCE: M.S. Thesis, Texas Tech University, Lubbock.
PAGE(S): 49
YEAR: 1978

[The effects of brush control on wildlife habitat was described on 12 areas in the Rio Grande Plain of Texas. Treatments included herbicide (Tordon 225), herbicide and burn, and a 20-year-old rootplowed area. Herbicide alone slightly decreased live brush density but did not affect horizontal vegetation density 2 years after treatment. Herbicide and burning decreased brush cover and horizontal vegetation significantly. Grass cover on both herbicide treatments was greater than on control sites. Call counts of bobwhite quail were higher on both herbicide treatments than on untreated areas. Coyote activity was highest on the sprayed and burned areas. Deer densities were correlated positively with percent brush cover.]

(KVM abstract)

Citation Number 236
AUTHOR: Stone, A. E.
TITLE: Effects of tebuthiuron site preparation on seed and invertebrate availability for birds in Georgia hardwood-southern pine forests.
SOURCE: M.S. Thesis, University of Georgia, Athens.
PAGE(S): 70
YEAR: 1986

Seeds and invertebrates were collected during June and September 1985 from 1 study site in the Piedmont Plateau and 1 in the Coastal Plain of Georgia. These areas were treated with the siol-active herbicide tebuthiuron (Graslan 60P) in January 1984, before planting loblolly pine (Pinus taeda) in December 1984 and January 1985. Additional seed and invertebrate collections were made from on-site untreated (control) areas. ... Results included greater graminoid seed biomass in September on treated vs. control areas on both sites, and lower invertebrate availability overall on the Piedmont Plateau site. General management recommendations are made for tebuthiuron use on these sites based on published literature regarding birds and bird food habits.

(Author's abstract)

Citation Number 237
AUTHOR: Strode, D. D.
TITLE: A preliminary report of the effects of the T. S. I. program on the wildlife habitat in the Ocala National Forest.
SOURCE: Proceedings of the Annual Conference of the Southeastern Association of Game and Fish Commissioners.
VOLUME: 10
PAGE(S): 59-68
YEAR: 1957

[This study was conducted to determine the effects of the TSI program in the longleaf pine areas of the Ocala National Forest on game habitat. The TSI work consisted of either girdling and poisoning (2,4,5-T) or cutting and poisoning undesirable commercial species. Results indicate that the TSI program has hurt the wildlife habitat in certain areas but has possibly helped in others depending on whether it is conducted in a heavy oak stand or in a thin stand. Recommendations for coordinating wildlife habitat needs with TSI programs are presented.]

(KVM abstract)

Citation Number 238
AUTHOR: Sullivan, T. P. and D. S. Sullivan.
TITLE: The effects of glyphosate herbicide on food preference and consumption in black-tailed deer.
SOURCE: Canadian Journal of Zoology.
VOLUME: 57
PAGE(S): 1406-1412
YEAR: 1979

The use of herbicides is an important part of forestry management practices in the Pacific Northwest because the regeneration of coastal forests is hampered by many species of deciduous shrubs and weeds. The herbicide glyphosate is used to control these undesirable species. Some effects of glyphosate on black-tailed deer have been investigated by analyzing food preference and consumption under simulated field conditions. Deer given a choice of control or glyphosate-treated alder and alfalfa browse showed no preference and ate more of the treated foliage. The ingestion of treated browse did not affect the consumption of labratory chow by the deer. These results indicate that spraying with the herbicide glyphosate should not prevent deer from feeding on foliage in the affected area.

(Authors' abstract)

Citation Number 239
AUTHOR: Sullivan, T. P. and D. S. Sullivan.
TITLE: Responses of a deer mouse population to a forest herbicide application: reproduction, growth and survival.
SOURCE: Canadian Journal of Zoology.
VOLUME: 59
PAGE(S): 1148-1154
YEAR: 1981

This study was designed to monitor some of the demographic responses of a deer mouse population to a forest application of Roundup herbicide. Populations of Peromyscus maniculatus were livetrapped from July 1978 to November 1980 on a control area and in a herbicide-treated 20-year-old Douglas-fir plantation at Maple Ridge, British Columbia. The herbicide had no apparent adverse effects on reproduction, growth, or survival of deer mice 1 year after treatment. Inconsistencies in growth rates and juvenile survival between control and experimental deer mice in 1980 could be due to the herbicide or demographic factors. Field dose applications of this herbicide should not have a direct effect on the dynamics of deer mouse populations.
(Authors' abstract)

Citation Number 240
AUTHOR: Sullivan, T. P. and D. S. Sullivan.
TITLE: Response of small mammal populations to a forest herbicide application in a 20 year old conifer plantation.
SOURCE: Journal of Applied Ecology.
VOLUME: 19
PAGE(S): 95-106
YEAR: 1982

(1) The response of small-mammal populations to a forest application of Roundup herbicide have been investigated at the University of British Columbia Research Forest, Maple Ridge, B.C., Canada.
(2) These populations included the deer mouse, Oregon vole, Townsend chipmunk, and shrews.
(3) Treatment of a 20-year-old Douglas fir plantation did not have any negative effects on the distribution and abundance of small-mammal populations during the first year. ...
(4) ... There was not an influx of new animals from the surrounding regions onto the treated area nor was there a significant movement of marked animals away from the sprayed area.
(5) Future changes in composition of the small-mammal community may occur in association with successional stages advancing from the herbicide-induced habitat alteration.
(Authors' summary)

Citation Number 241
AUTHOR: Sullivan, T. P.
TITLE: Effects of glyphosate on selected species of wildlife.
SOURCE: In: E. Grossbard and D. Atkinson (eds.). The Herbicide Glyphosate. Butterworths Publishing Company, Boston, Mass.
PAGE(S): 186-199
YEAR: 1985

Studies on food preference and habitat use by black-tailed deer indicate that these animals will consume glyphosate-treated foliage and occupy treated habitats. If the nutritional content of dying foliage is not greatly reduced, and there are no adverse effects of glyphoste on the physiology of deer, then these animals should be able to feed successfully within a sprayed area. ... The long-term effects of glyphosate on deer and related ungulates are not known. ... Glyphosate did not have any negative effects on the distribution and abundance of small mammal populations, at least during the first year after habitat alteration. ... Herbicides such as glyphosate, through alteration of vegetation, can modify the density, habitat use and foraging behaviour of nesting birds. ... (Author's conclusions)

Citation Number 242
AUTHOR: Sullivan, T. P. and E. J. Hogue.
TITLE: Influence of orchard floor management on vole and pocket gopher populations and damage in apple orchards.
SOURCE: Journal of the American Society for Horticultural Science.
VOLUME: 112
PAGE(S): 972-977
YEAR: 1987

Removal of all vegetation with herbicides over the total orchard floor or only in tree rows significantly reduced montane vole (Microtus montanus Peale), meadow vole (M. pennsylvanicus Ord), and northern pocket gopher (Thomomys talpoides Richardson) populations and damage. Herbicide treatments in four test orchards were carried out during May, July, and Sept. 1983 to 1985. Average overwinter abundance of voles was reduced 53% to 99% on treatment areas. Several vole populations went to extinction in the third year of herbicide treatment. ... Pocket gopher populations and damage were significantly lower in treatment than control blocks. Deer mouse (Peromyscus maniculatus Wagner) and yellow pine chipmunk (Eutamias amoenus J.A. Allen) populations generally increased on treated areas. Use of herbicides to control orchard floor vegetation is an effective means of rodent damage control. (Authors' abstract)

Citation Number 243
AUTHOR: Sullivan, T. P.
TITLE: Non-target impacts of the herbicide glyphosate.
SOURCE: Mammal Pest Management Ltd., Information Report.
PAGE(S): 43
YEAR: 1988

[A compendium of references and abstracts is provided on the non-target impacts of glyphosate. Sections include both direct and indirect effects of glyphosate on mammals, birds, fish, aquatic invertebrates and algae, terrestrial invertebrates, and microflora.]
(KVM abstract)

Citation Number 244
AUTHOR: Sullivan, T. P.
TITLE: Influence of forest herbicide use on deer mouse and Oregon vole populations: Recruitment, growth, and survival.
SOURCE: Journal of Wildlife Management.
PAGE(S): in review
YEAR: 1989

This study investigated the direct effects of a forest application of glyphosate herbicide on reproduction, growth and survival in deer mouse (Peromyscus maniculatus) and Oregon vole (Microtus oregoni) populations. Populations were sampled in control and treatment plantation habitats near Maple Ridge, British Columbia, Canada from April 1981 to September 1983 and from April to October 1985. Recruitment of deer mice declined during the first post-spray summer and winter, but increased on the treatment area in subsequent years. There was generally little difference in recruitment of Oregon voles between control and treatment areas. Survival of animals, in general, was similar on control and treatment areas. However, female voles did survive significantly better on the treatment than on the control area in the post-spray summer of 1982 and winter of 1982-83. Lack of consistent differences in body weights, and somewhat better growth rates of deer mice and voles on treatment than control areas, during post-spray periods, indicated that glyphosate had no effect on metabolic or general physiological processes in the development of young animals. Physiological changes in individual animals, from exposure to or ingestion of glyphosate, and manifestation of these effects in demographic attributes at the population level were not apparent.
(Author's abstract)

Citation Number 245
AUTHOR: Sullivan, T. P.
TITLE: Demographic responses of small mammal populations to a herbicide application in coastal coniferous forest: Population density and resiliency.
SOURCE: Canadian Journal of Zoology.
PAGE(S): in press
YEAR: 1989

This study was designed to assess the demographic responses of small mammal populations to herbicide-induced habitat alteration in a 7-year-old Douglas fir (Pseudotsuga menziesii) plantation near Maple Ridge, British Columbia, Canada. Populations of the deer mouse (Peromyscus maniculatus), Oregon vole (Microtus oregoni), Townsend chipmunk (Eutamias townsendii), and shrews (Sorex spp.) were sampled in control and treatment habitats from April 1981 to September 1983 and from April to October 1985. Recolonization of removal areas by these species was also monitored in both habitats. There was little difference in abundance of deer mice, Oregon voles, and shrews between control and treatment study areas. Chipmunk populations appeared to decline temporarily on the treatment areas relative to controls. Recolonization by voles was not affected by habitat change, but for deer mice was lower on the treatment than control area. Both deer mouse and Oregon vole populations were at comparable densities on control and treatment areas in the second and fourth years after herbicide treatment. The proportion of breeding animals and average duration of life were similar in control and treatment populations of deer mice and voles. These small mammal species should be able to persist in areas of coastal coniferous forest which are treated with glyphosate for conifer release.

(Author's abstract)

Citation Number 246
AUTHOR: Tanner, G. W., J. M. Inglis and L. H. Blankenship.
TITLE: Acute impact of herbicide strip treatment on mixed-brush white tailed deer habitat on the northern Rio Grande Plain.
SOURCE: Journal of Range Management.
VOLUME: 31
PAGE(S): 386-391
YEAR: 1978

White-tailed deer tended to evacuate a 1,800-ha, mixed-brush pasture during 5 months following aerial strip-spraying in May with 2,4,5-T + picloram (1:1) at 0.56 kg/ha and 1.12 kg/ha and in two widths (80% coverage). Deer were attracted to the pasture in above-normal numbers the following winter but their numbers returned to normal by 11 months posttreatment. Apparently, succulent woody plant regrowth provided an attractive food base which induced the posttreatment increase in numbers. Deer on the pasture did not rearrange their use to favor untreated brush as a response to treatment rate or width of treated strip. Woody plant canopy cover was significantly reduced on all treated strips but cover screen at deer height was unaffected. Evidence suggests that only the high rate of herbicide application resulted in significant reduction in the stature of brush. Density of live brush stems was reduced less than 20% by treatment.
(Authors' abstract)

Citation Number 247
AUTHOR: Terry, T. A., R. F. Lowery, G. A. Hurst and R. C. Warren.
TITLE: Meeting herbaceous weed control objectives in loblolly pine plantations - the rolling coastal plain.
SOURCE: Proceedings of the Southern Weed Science Society.
VOLUME: 39
PAGE(S): 195
YEAR: 1986

Herbaceous weed control programs in young plantations [in Mississippi] must strive to: (1) reduce herbaceous competition to a level that economically improves plantation survival and growth, (2) maintain vegetative cover adequate to prevent significant soil erosion, (3) provide adequate food and cover for important wildlife species, and (4) be otherwise environmentally acceptable. ... Preferred deer forage levels on treated areas are similar to nontreated areas three years after broadcast applications of Velpar-L and forb levels increase somewhat over those found in control areas. ...
(Authors' abstract)

Citation Number 248
AUTHOR: Tharp, J. E.
TITLE: A study of scaled and bobwhite quail with special emphasis on habitat requirements and brush control.
SOURCE: M.S. Thesis, Texas Tech University, Lubbock.
PAGE(S): 58
YEAR: 1971

The effects of brush control on bobwhite and scaled quail habitat was studied on 14 study areas in 7 vegetation types. The effects of brush control varied with the type of habitat, amount of preferred canopy cover existing before and after treatment, amount of grass cover, and species of quail. The author concluded that [in regard to herbicide spraying, brush control as currently practiced may be resulting in better quail habitat generally by encouraging sprouting of mesquite which results in low cover better suited to quail than tall mesquite.]

(KVM abstract)

Citation Number 249
AUTHOR: Thompson, M., R. Umber, M. Shaw, J. Skeen and R. Thackston.
TITLE: Herbicide and burning effects on overstory defoliation and understory production on Cookson Hills Wildlife Management Area.
SOURCE: Annual Meeting of the Southeast Deer Study Group, Oklahoma City.
VOLUME: 12
PAGE(S): 19
YEAR: 1989

Overstory defoliation and understory annual production were evaluated to test the effectiveness of 3 herbicides (picloram, hexazinone, and tebuthiuron) and controlled burning in providing openings and increasing white-tailed deer (Odocoileus virginianus) forage in an oak-hickory forest in northeastern Oklahoma. ... Overall, single-tree injection of picloram was the most effective in defoliating trees. Hand broadcast hexazinone pellets were most effective in defoliating trees on ridgetops. Tebuthiuron overstory kill was not significantly different than that of the control. Burning improved kill efficacy by 71% and increased forb and grass production. Aerial application of tebuthiuron and burning produced the most grass while picloram injection combined with burning produced the greatest biomass of forbs. Picloram injection effected the best overall kill of the overstory and provided the best deer forage in terms of quality, abundance, and sustained yield.

(Authors' abstract)

Citation Number 250
AUTHOR: Thompson, R. and C. Kabat.
TITLE: Herbicides for creating wildlife food patches.
SOURCE: Proceedings of the North Central Weed Control Conference.
VOLUME: 13
PAGE(S): 26-27
YEAR: 1956

[Two bluegrass and 2 quackgrass areas were experimentally sprayed with dalapon (8 lb ai/ac) as a means of eliminating competition in sod-bound soil by pre-planting treatment. Results indicate that dalapon gave sufficient sod control for 1 growing season when applied to grass 4+ inches high. Bluegrass is more completely controlled than quackgrass.]
(KVM abstract)

Citation Number 251
AUTHOR: Tietjen, H. P., C. H. Halvorson, P. L. Hegdal and A. M. Johnson.
TITLE: 2,4-D herbicide, vegetation, and pocket gopher relationships, Black Mesa, Colorado.
SOURCE: Ecology.
VOLUME: 48
PAGE(S): 634-643
YEAR: 1967

In a 7-year study on Black Mesa, Colorado, elevation 10,000 ft 2,4-D herbicide treatment initially reduced forb abundance and northern pocket gopher (Thomomys talpoides) populations 80% to 90%. Both forbs and pocket gophers remained at low levels on one area but returned to pretreatment levels on the other area. The decline in pocket gopher numbers was caused by an inability to survive where their preferred food (forbs) was eliminated by herbicide treatment. The decline was not caused by movement of the animals from sprayed areas, or by direct or indirect toxicity of 2,4-D. The common grasses offer, at best, only marginal diet for northern pocket gophers; only succulent grasses or those bearing corms or rhizomes yield a subsistence diet. Limited sampling did not indicate that the spray treatment affected the numbers of other small mammals.
(Authors' abstract)

Citation Number 252
AUTHOR: Torrey, D. S. and C. M. Kirkpatrick.
TITLE: Pre- and post-treatment results of aquatic herbicide application at Purdue Wildlife Area.
SOURCE: Proceedings of the Indiana Academy of Science.
VOLUME: 89
PAGE(S): 145-146
YEAR: 1980

[To preserve waterfowl habitat and increase waterfowl use, a pond on Purdue Wildlife Area, near West Lafayette, Indiana was sprayed with Aquathol in June 1977. Results indicate that the herbicide had an effect on the aquatic vegetation, waterfowl, and aquatic invertebrates. Although there was no increase in the number of diving ducks, they appeared to dive more and increased their time at the area after the herbicide application. The number of dabbling waterfowl declined posttreatment. Studies of muskrat house composition suggest that they were not affected by the reduction of submerged aquatic vegetation. Aquatic herbicides may be an effective tool for preserving waterfowl habitat in that it inhibits the natural plant succession that would eventually replace the aquatic environment.]

(KVM abstract)

Citation Number 253
AUTHOR: Trumbo, H. A. and W. E. Chappell.
TITLE: Techniques involved in the use of chemicals for establishing wildlife clearings.
SOURCE: Proceedings of the Northeastern Weed Control Conference.
VOLUME: 14
PAGE(S): 454-459
YEAR: 1960

It is apparent that fenuron and monuron are the most effective herbicides for killing a greater proportion of the tree species; fenuron being more desirable because quicker results are obtained. ... A considerable number of annual and perennial plants invaded these areas during the first growing season after treatment. ... Due to the great number of sprouts produced by the use of Ammate [it] might be used to produce browse in areas where it is desired. ... The use of 2,4,5-T in spaced axe-cut frills is not a satisfactory method of creating an opening... Herbicides as a wildlife management tool shows great promise for creating wildlife clearings and controlling undesirable tree and shrub species...

(Authors' summary)

Citation Number 254
AUTHOR: Trumbo, H. A. and W. E. Chappell.
TITLE: Techniques involved in the use of chemicals for establishing wildlife clearings.
SOURCE: Proceedings of the Annual Conference of the Southeastern Association of Game and Fish Commissioners.
VOLUME: 13
PAGE(S): 34-38
YEAR: 1961

Same paper as Trumbo and Chappell (1960).

Citation Number 255
AUTHOR: Turrentine, J. M.
TITLE: The ecology of bobwhite quail in aerially sprayed sand shinnery oak habitat.
SOURCE: M.S. Thesis, Texas Tech University, Lubbock.
PAGE(S): 83
YEAR: 1970

[The effect of aerial herbicide treatment of sand shinnery oak on bobwhite quail habitat was studied on 7 areas in the Texas Panhandle. Both sprayed and unsprayed areas had adequate cover to maintain quail populations throughout the year with the exception of the 'no brush' area which had quail use only along edges near pastures containing brush. Dead stems provided cover until the oaks regrew. To insure adequate cover, portions of an area should remain untreated. Distance between brush strips probably should not exceed 400 yards.]

(KVM abstract)

Citation Number 256
AUTHOR: Urness, P. J.
TITLE: Influence of range improvement practices on composition, production, and utilization of Artemisia deer winter range in central Oregon.
SOURCE: Ph.D. Dissertation, Oregon State University.
PAGE(S): 195
YEAR: 1966

... The objectives of this study were to evaluate the impact of various sagebrush control practices [including the use of herbicides] on the composition, production, and utilization of deer forage plants during the critical winter period [in Lake County, Oregon during 1963 through 1965]. ... It was concluded that effects of existing improvement programs were usually minor compared with the declining condition of the all-important bitterbrush stands resulting from excessive winter populations of deer. ... Seeding and other range improvements tended to create a diversified plant cover and forage resource that appeared to enhance the use of the untreated sagebrush. ...

(Author's abstract)

Citation Number 257
AUTHOR: Vallentine, J. F.
TITLE: The application and use of herbicides for range plant control. In: S.B. Monsen and N. Shaw, (compilers), Managing Intermountain
SOURCE: Rangeland-Improvement of Range and Wildlife Habitats. United States Department of Agriculture, Forest Service, General Technical Report.
VOLUME: INT-157.
PAGE(S): 39-48
YEAR: 1983

[Herbicides are an effective, necessary, and environmentally sound tool for the control of weeds and brush on rangelands to enhance livestock and big game forage availability. Various herbicide application methods and safety precautions are discussed. The properties and rangeland/pasture uses of 15 herbicides is presented in tabular form. Uses of amitrole, atrazine, dalapon, dicamba, 2,4-D, fenac, glyphosate, karbutilate, paraquat, picloram, silvex, 2,4,5-T, 2,3,6-TBA, tebuthiuron, and triclopyr in range management are discussed.]

(KVM abstract)

Citation Number 258
AUTHOR: VanEtten, R. C.
TITLE: Ecological changes in sharp-tailed grouse habitat resulting from an aerial application of 2,4-D.
SOURCE: Michigan Department of Conservation Report.
VOLUME: 2256
PAGE(S): 6
YEAR: 1959

Spraying a 300-acre area in Michigan's Upper peninsula from the air with 2,4-D to improve sharp-tailed grouse habitat produced marked ecological changes. ... Some ground cover shrubs and herbaceous plants showed temporary injury, but most regained at least their former abundance after 3 years. Many open-growing species increased noticeably as a result of removal of the overstory, and several new plants appeared. Some of these furnish new grouse foods. The herbicidal treatments may have been too complete, since it failed to leave edges for food and cover. Possibly [they] should leave strips unsprayed in the future. Few sharptails used the area until several years after treatment.

(Author's summary)

Citation Number 259
AUTHOR: VanEtten, R. C.
TITLE: Effectiveness of the herbicides silvex and PBA in controlling deciduous trees and shrubs.
SOURCE: Michigan Department of Conservation Report.
VOLUME: 2258
PAGE(S): 3
YEAR: 1959

[Various concentrations of silvex and PBA were tested to determine their effectiveness on deciduous trees, especially sugar maple. Silvex produced better kills of vegetation than any of the PBA tests. Apparently 1 lb/ac of silvex was too light to give the desired kill. Regeneration in most species was prolific, regardless of concentration. Juneberry, a good wildlife food plant, withstood mixtures of up to 4 pounds per acre of silvex.]

(KVM abstract)

Citation Number 260
AUTHOR: VanEtten, R. C. and I. Thomson.
TITLE: The value of silvex in creating openings in maple-aspen stands.
SOURCE: Michigan Department Conservation Report.
VOLUME: 2257
PAGE(S): 7
YEAR: 1959

Aerially spraying 2.3 lbs/ac of silvex on a 24-acre strip of mixed aspen and maple to improve ruffed grouse habitat created some openings in the canopy. It failed to kill most of the dominant aspen and maple, and encouraged sprouting of the aspen. ...the habitat improvement will be of limited duration without additional herbiciding. ... Most open-growing herbaceous plants were increasing as a result of opening of the canopy, and several new species had entered the area. The spray produced large amounts of nutritious deer browse, utilized heavily by the deer. In some instances this additional deer food may be as important to game management as the openings created. ...

(Authors' summary)

Citation Number 261
AUTHOR: Warbach, O.
TITLE: Control of Japanese honeysuckle in wildlife borders.
SOURCE: Journal of Wildlife Management.
VOLUME: 17
PAGE(S): 301-304
YEAR: 1953

Japanese honeysuckle, an exotic that can be either a pest or an asset in different localities, makes maintenance of wildlife plantings in the Southeast a difficult problem. A herbicide applied during the winter and strong enough to kill dormant woody plants will stop the spread of honeysuckle from a woods edge for a least 2 years. A low-percentage 2,4-D water spray applied to honeysuckle growing in bicolor lespedeza borders at a time when honeysuckle is starting growth and bicolor is still dormant will selectively destroy the vine without injuring the border.

(Author's summary)

Citation Number 262
AUTHOR: Ward, A. L.
TITLE: Sagebrush control with herbicide has little effect on elk calving behavior.
SOURCE: United States Department of Agriculture, Forest Service, Research Note.
VOLUME: RM-240
PAGE(S): 4
YEAR: 1973

Elk did not change their calving behavior or feeding habits on a site where 96.7% of the big sagebrush (Artemisia tridentata) cover had been killed with 2 pounds acid equivalent of 2,4-D herbicide. (Author's abstract)

Citation Number 263
AUTHOR: Warren, R. C.
TITLE: Food abundance, plant rating, and track counts for white-tailed deer; effects of control burning pine plantations; avian populations in pine plantations site prepared by mist-blowing and tree-injection; and acorn production and squirrel population estimates in the mixed pine-hardwood forest type of east-central Mississippi.
SOURCE: M. S. Thesis, Mississippi State University.
PAGE(S): 791
YEAR: 1980

[In addition to other results, the author reports on the effect that mist-blowing/injection (2,4,5-T and 2,4-D) site preparation has on avian populations. The deer habitat responses to type of site preparation and plantation age are also discussed.] (KVM abstract)

Citation Number 264
AUTHOR: Warren, R. C., G. A. Hurst, and T. L. Darden, Jr.
TITLE: Relative abundance of cavity nesting birds on pine plantations site prepared by herbicides.
SOURCE: In: W.C. McComb (ed). Proceedings of the Workshop on Management of Nongame Species and Ecological Communities, University of Kentucky, Lexington.
PAGE(S): 197-205
YEAR: 1984

Coefficients of detectability were calculated for cavity nesting species observed on variable width transects in 3 loblolly pine (Pinus taeda) plantations [2 to 8 years-old] in east central Mississippi. After clearcutting, the areas had been site prepared by mist-blowing (2,4,5-T) followed by tree-injecting (2,4-D), which created much logging debris and many snags. ... In the spring, 9-13 species were found on the plantations with the highest number at ages 2-5 years. In the winter there were 10-15 species observed. Total cavity nester abundance in the spring was lowest at plantation age 2 and highest at age 4, but remained comparatively high at age 8. [The abundant primary and secondary cavity nesters are listed and the effects of plantation age on these species is described.] (Authors' abstract)

Citation Number 265
AUTHOR: Watkins, R. M., R. A. Beardmore, and M. H. Johnston.
TITLE: Arsenal applicators concentrate for loblolly pine release: Three-year results of rates and timings of hardwood control.
SOURCE: Proceedings of the Southern Weed Science Society.
VOLUME: 42
PAGE(S): 225
YEAR: 1989

Vegetative responses were studied in 2 loblolly pine (Pinus taeda) plantations in east-central Mississippi following Arsenal applications made in July and October 1985. ... Arsenal treatments were 0.75 without surfactant, 0.5, 0.75, and 1.0 pounds a.i./acre with surfactant. ... The species transition following Arsenal applications benefited wildlife habitat, with greater and more desirable preferred wildlife food cover. Grasses and wood plants decreased in the treatment plots, while forbs and vines increased. Legume plants increased in the treated plots, especially Lespedeza species.

Citation Number 266
AUTHOR: Whitson, R. E., S. L. Beasom and C. J. Scifres.
TITLE: Economic evaluation of cattle and white-tailed deer response to aerial spraying of mixed brush.
SOURCE: Journal of Range Management.
VOLUME: 30
PAGE(S): 214-217
YEAR: 1977

The combined economic effects, based on returns for lease hunting of white-tailed deer in conjunction with livestock production, were calculated following partial treatment (80% sprayed in alternating strips) and complete treatment of mixed brush in South Texas with aerial sprays of 2,4,5-T and picloram at 1 lb/acre. Both approaches were economically feasible based on a 10% discount rate over a 9-year projected treatment life, except when the brush was completely sprayed and cattle prices were $0.255/lb. However, when cattle prices were less than $0.495/lb, partial treatment by aerial spraying was preferred, in an economic sense, since returns from lease hunting where 20% of the brush was left untreated for wildlife habitat more than compensated for reduced cattle returns. (Authors' abstract)

Citation Number 267
AUTHOR: Wiens, J. A. and J. T. Rotenberry.
TITLE: Response of breeding passerine birds to rangeland alteration in a North American shrubsteppe locality.
SOURCE: Journal of Applied Ecology.
VOLUME: 22
PAGE(S): 655-668
YEAR: 1985

During 1980, a large area of sagebrush (Artemisia tridentata Nutt.)-dominated rangeland in southern Oregon, USA was sprayed with the herbicide 2,4-D, the dead shrubs removed, and crested wheatgrass (Agropyron crisatum (L.)) planted. ...[They] monitored breeding bird populations in the treated area for 3 years prior to and 3 years following the alteration. ... There was no evidence of an immediate response by the bird populations to these habitat changes. In the year following the treatment, abundances of sage sparrows (Amphispiza belli (Cassin)) did not change, while the density of Brewer's sparrows (Spizella breweri Cassin) decreased. ... The failure of such bird populations to respond rapidly to major habitat changes may relate to time lags produced by site tenacity of breeding individuals. Such time lags complicate attempts to formulate policies on the basis of short-term before and after surveys. ...

(Authors' summary)

Citation Number 268
AUTHOR: Wilbert, D. E.
TITLE: Some effects of chemical sagebrush control on elk distribution.
SOURCE: Journal of Range Management.
VOLUME: 16
PAGE(S): 74-78
YEAR: 1963

[The effect of chemical control (2,4-D) of big sagebrush (Artemisia tridentata) on the spring distribution of elk was evaluated by treating two 25 acre plots in Teton Co., Wyoming. Wildlife use was determined by actual animal sighting, and by intensive pellet group counts. The treatments had striking effects on distribution of game animals. All data gathered indicate that the treated areas provided a definite attraction for the elk, especially in the late spring. These data would indicate that manipulation of sagebrush range offers possibilities as a practical tool to aid in the distribution of elk in the spring.]

(KVM abstract)

Citation Number 269
AUTHOR: Worsham, A. D., R. F. Soots and J. F. Parnell.
TITLE: Herbicides for vegetation management in restoring dredge islands as nesting sites for coastal nesting birds.
SOURCE: Proceeding of the Southern Weed Science Society.
VOLUME: 27
PAGE(S): 298
YEAR: 1974

... Herbicide treatments were applied on a 6-year old dredge island [in North Carolina] in 1973 to determine the possibility of using soil-sterilant type herbicides to recreate bare and sparsely vegetated nesting habitats for birds. Simazine, prometone, a mixture of 4% bromacil and 6% diuron, tebuthiuron, karbutilate, and dichlobenil were applied. ... Substituted urea-containing herbicides were promising for complete vegetation control where saltmeadow cordgrass was dense. Thus the potential exists for use of herbicides on dredge islands to alter plant succession to favor nesting habitats for certain types of colonial shorebirds and wading birds.

(Authors' abstract)

Citation Number 270
AUTHOR: Young, J. A.
TITLE: Principles of weed control and plant manipulation.
SOURCE: In: S. B. Monsen and N. Shaw, (compilers). Managing Intermountain Rangeland-Improvement of Range and Wildlife Habitat. United States Department of Agriculture, Forest Service, General Technical Report.
VOLUME: INT-157.
PAGE(S): 6-10
YEAR: 1983

Weed control and revegetation of degraded range sites is one of the most challenging tasks facing land managers. The manager must be able to assess the inherent potential for specific environmental situations to support and maintain plant growth. The land manager must also be able to assess the relative successional status of these environmental units. Any weed control treatment will initiate a dynamic successional plant response. The consequences of this response must be understood and directed toward desirable management goal or the weed control treatment will often lead to the establishment of a plant community less desirable than the treated one.

(Authors' abstract)

Citation Number 271
AUTHOR: Zorb, G. L.
TITLE: Research progress report on chemical seedbed preparation for wildlife food patches.
SOURCE: Down-To-Earth.
PAGE(S): 8-9
YEAR: 1956
see Zorb et al. (1956)

Citation Number 272
AUTHOR: Zorb, L., L. Ruch and R. G. Heath.
TITLE: Chemical seed preparation for game food patches.
SOURCE: Proceedings of the North Central Weed Control Conference.
VOLUME: 13
PAGE(S): 27-28
YEAR: 1956
[Dalapon and 2,4-D were used in a series of tests to investigate the potential of chemical farming for the Michigan Department of Conservation's game food patch program. The results indicated that chemical techniques should make possible a streamlining of the Department's food patch program. Research results are encouraging; present techniques need refining.]
(KVM abstract)

ADDENDUM

Citation Number 273
AUTHOR: Blake, F. M.
TITLE: Plant biomass, plant species composition and pine tree characteristics for a banded versus broadcast hexazinone treated pine plantation.
SOURCE: M.S. Thesis, Mississippi State University
PAGE(S): 50
YEAR: 1986

Vegetative responses, white-tailed deer (Odocoileus virginianus) forage, and loblolly pine (Pinus taeda) seedling survival, growth, tipmoth and fusiform rust incidence were compared in the first 2 field growing seasons of a loblolly pine plantation in the Interior Flatwoods in Oktibbeha County, Mississippi following banded and broadcast application of hexazinone. ... In the first growing season, for total summer plant biomass, summer and winter deer forage abundance, and pine seedling variables...there was no significant difference (P=0.10) between the 2 herbicide treatments, but the controls differed significantly from both herbicide treatments. ... In the second season, ...there was no significant difference (P=0.10) among the 3 treatments. ... A similar number of plant species was found on each of the 3 treatments. Vegetation data indicate a rapid recovery of vegetation in the hexazinone treatments in the second field growing season. (Author's abstract)

Citation Number 274
AUTHOR: Blake, P. M., G. A. Hurst and T. A. Thomas.
TITLE: Responses of vegetation and deer forage following application of hexazinone.
SOURCE: Southern Journal of Applied Forestry.
VOLUME: 11
PAGE(S): 176-180
YEAR: 1987

Vegetation responses were studied on a loblolly pine (Pinus taeda) plantation that had received intensive mechanical site preparation and hexazinone (1 lb/ac a.i.) for herbaceous weed control. Vegetation on plots treated by a broadcast application of granular hexazinone (Pronone 5G) was compared to vegetation on plots that received a banded (top of bed only) application of liquid hexazinone (Velpar L). ... White-tailed deer (Odocoileus virginianus) forage was significantly greater on control plots (1,481 lb/ac) than on broadcast (393 lb/ac) and banded plots (534 lb/ac) in September of the first year's growth, but there were no differences after the second growing season. ...

(Authors' summary)

Citation Number 275
AUTHOR: Bramble, W. C. and W. R. Byrnes.
TITLE: Effect of certain common brush control techniques and materials on game food and cover on a power line right-of way, No. 2.
SOURCE: Pennsylvania Agricultural Experiment Station, Progress Report.
VOLUME: 135
PAGE(S): 7
YEAR: 1955

A replicated series consisting of 5 spray treatments and 1 control were applied to woody brush by commercial techniques on a power line right-of-way in central Pennsylvania in June 1953 and January 1954. Data were taken 2 growing seasons after the first applications. ... Wildlife usage of the sprayed areas after treatment has indicated that the right-of-way is still attractive to game species and that small game, in particular may be expected to increase as the plant cover develops. [Herbicides included 2,4-D, 2,4,5-T, and Ammate].

(Authors' summary)

Citation Number 276
AUTHOR: Bramble, W. C. and W. R. Byrnes.
TITLE: Development of wildlife food and cover on an electric transmission right-of-way maintained by herbicides: a 30 year report.
SOURCE: Purdue Agricultural Experiment Station Research Bulletin.
VOLUME: 974
PAGE(S): 24
YEAR: 1982

A 30-year study of effects of herbicide sprays on wildlife food and cover has been carried out in central Pennsylvania on a 180-foot-wide electric transmission right-of-way to answer the question, "Do herbicides damage wildlife habitat?" The herbicides used were 2,4-D, 2,4,5-T and ammonium sulfamate. Highly acceptable control of tall-growing woody species was maintained, and excellent wildlife habitat conditions were developed by five different initial spray applications followed by selective herbicide spray maintenance. ... The common plant food species available on the right-of-way rated high in wildlife feed value. ... A typical proclimax vegetation type resulted that may be maintained by tree removal with herbicides. This proclimax is characterized by high species density and richness, and a consistent floristic composition.

(Authors' summary)

Citation Number 277
AUTHOR: Bramble, W. C., W. R. Byrnes and R. J. Hutnik.
TITLE: Effects of a special technique for right-of-way maintenance on deer habitat.
SOURCE: Journal of Arboriculture
VOLUME: 11
PAGE(S): 278-284
YEAR: 1985

White tailed deer (Odocoileus virginianus) habitat and use were evaluated on an electric transmission right of way (ROW) before and after 5 different herbicide treatments and handcutting were applied using a special technique. ... Although appreciable changes occurred in specific deer habitat factors, decreases in certain factors were offset by increases in other factors. As a consequence, total habitat values remained high. Deer presence increased on all ROW treatment areas from 1982 to 1984. Deer browsed both woody and herbaceous vegetation comparably on the ROW and in the forest. The utilization factor, percent cover x percent browsed, was higher for woody vegetation in the forest and for herbaceous vegetation on the ROW. [Herbicides used were Garlon 4 (triclopyr), Weedone 2,4-DP (dichlorprop) + Amdon 101 (picloram + 2,4-D), Tordon K (picloram) and Tordon RTU (picloram + 2,4-D)
(Authors' abstract)

Citation Number 278
AUTHOR: Bramble, W. C., W. R. Byrnes and R. J. Hutnik.
TITLE: Development of plant cover diversity on an electric transmission right-of-way.
SOURCE: In: W. R. Byrnes and H. A. Holt (ed.). Proceedings of the Fourth National Symposium, Environmental Concerns in Rights-of-way Management. Mississippi State University.
PAGE(S): 89-93
YEAR: 1987

Effects of a special right-of-way (ROW) maintenance technique on plant cover diversity was studied on an electric transmission ROW in central Pennsylvania. The important feature of this technique was a differential treatment of wire and border zones. The wire zone included the ROW area lying under the wires and the two border zones occupied the remaining ROW area on both sides. Four herbicide treatments and handcutting were applied in five replications. All trees and tall shrubs were treated in the wire zone; while trees only were treated in border zones. Pellet applications of Tordon 10K and stem-foliage sprays of Weedone 2,4-DP with Tordon 101 produced a low cover of grass-herb-fern in the wire zone and a tall shrub-low shrub-grass-herb on the borders. Summer basal of Garlon 4 and frill and squirt of Tordon RTU applications were less drastic and produced a medium shrub-herb-grass cover dominated by blackberry in the wire zone. Handcutting produced a sapling tree thicket. The borders remained practically unchanged. Deer use of the ROW remained high after treatments and a diverse deer habitat developed. The songbird population of the ROW and the dominant bird species were retained.
(Authors' abstract)

Citation Number 279
AUTHOR: Braun, C. E., T. Britt and R. O. Wallestad.
TITLE: Guidelines for maintenance of sage grouse habitats.
SOURCE: Wildlife Society Bulletin.
VOLUME: 5
PAGE(S): 99-106
YEAR: 1977

The importance of sagebrush (Artemisia spp.) to maintenance of population stability of sage grouse (Centrocercus urophasianus) is documented from reviews of studies throughout the range of this species. Known effects of sagebrush control [including use of herbicides] on sage grouse are presented. Guidelines for the maintenance of sage grouse habitats promulgated by the Western Association of State Game and Fish Commissioners are given. (Author's abstract)

Citation Number 280
AUTHOR: Copeland, J. D.
TITLE: Wildlife habitat conditions on loblolly pine plantations site prepared by mechanical and chemical methods.
SOURCE: M.S. Thesis, Mississippi State University
PAGE(S): 48
YEAR: 1986

Three loblolly pine (Pinus taeda) plantations ranging in size from 54-160 ha near Longview, Oktibbeha County, Mississippi, were sampled for selected white-tailed deer (Odocoileus virginianus) forage, plant species composition, and loblolly pine growth at plantation ages 1 and 2 years. Mature pine-hardwood forests were clearcut and the 3 tracts were site prepared...in the fall 1981, planted in February 1982, and aerially sprayed with 4.68 or 7.01 l/ha of Velpar (hexazinone) in April 1982. ... Total deer forage averaged 101 kg/ha in September 1982, 8.5 kg/ha in March 1983, 1135.5 kg/ha in September 1983, and 68.8 kg/ha in March 1984. ... There were 73 species of plants recorded in September 1982 and 164 species recorded in September 1983. ... (Author's abstract)

Citation Number 281
AUTHOR: Heady, H. F. and J. Bartolome.
TITLE: The Vale rangeland rehabilitation program: The desert repaired in southeastern Oregon.
SOURCE: United States Department of Agriculture, Forest Service, Resource Bulletin
VOLUME: PNW-70
PAGE(S): 139
YEAR: 1977

This report evaluates the large-scale rangeland rehabilitation program in the Vale, Oregon, District of the Bureau of Land Management. ... The major sagebrush control practices used either disk plows or aerially applied 2,4-D. ... Extensive sampling of treated areas revealed that most attempts at land rehabilitation succeeded. ...wildlife species exhibited varied responses in relation to their particular habitat requirements, but none seems to have been damaged permanently by the land treatment. ...

(Authors' research summary)

Citation Number 282
AUTHOR: Holechek, J. L.
TITLE: Brush control impacts on rangeland wildlife.
SOURCE: Journal of Soil and Water Conservation.
VOLUME: 36
PAGE(S): 265-269
YEAR: 1981

[The author reviews the effects of brush control, including the use of herbicides, on range wildlife. Wildlife species discussed include white-tailed deer, mule deer, pronghorn antelope, elk, moose, bighorn sheep, sage grouse, wild turkey, bobwhite quail, mourning dove, lesser prairie chicken, Brewer's sparrow, Vesper's sparrow, and other small mammals.]

(Authors' abstract)

Citation Number 283
AUTHOR: Hurst, G.
TITLE: Herbicides and wildlife: all the news ain't bad.
SOURCE: Proceedings of the 34th Annual Mountain Lake Vegetation Management Council, Incorporated.
VOLUME: 5
PAGE(S): 53-66
YEAR: 1988

... Following intensive mechanical site prep...and an application of Hexazinone (Velpar or Pronone), total plant biomass, amount of selected deer forage, and number of plant species decreased during the first growing season in a loblolly pine plantation. However, at the end of the second growing season there were no significnat differences in plant characteristics between herbicide-treated and not treated plots. Two important wildlife plants, dove weed and pokeweed were resistant to Hexazinone. When Imazapyr (Arsenal) was used as part of the site prep, similar results, i.e., recovery by the plant community in the second growing season, were found. The "brown and burn" site prep method, using Pronone 10G and broadcast burning, resulted in plant communities dominated by forbs the first growing season. ... Herbicides (Arsenal, Pronone, Velpar), when used to control hardwood brush in 4 to 5-year old pine plantations, resulted in an increase in selected deer forage, mainly forbs. ... Blackberry and many legumes, important wildlife plants, were resistant to Arsenal. ...

(Author's abstract)

Citation Number 284
AUTHOR: Inglis, J. M.
TITLE: Wildlife management and IBMS
SOURCE: Integrated brush management systems for South Texas: Development and implementation. Texas Agricultural Experiment Station, Bulletin
VOLUME: 1493
PAGE(S): 35-40
YEAR: 1985

[The author discusses the implications of brush management, including herbicides, to wildlife management in South Texas. Wildlife species discussed include white-tailed deer, bobwhite quail, scaled quail, and javelina.]

(KVM abstract)

Citation Number 285
AUTHOR: Linde, A. F.
TITLE: Vegetation management in water impoundments: alternatives and supplements to water-level control.
SOURCE: Proceedings, Water impoundments for wildlife: A habitat management workshop. United States Department of Agriculture, Forest Service, General Technical Report.
VOLUME: NC-100
PAGE(S): 51-60
YEAR: 1985

[Techniques useful for vegetation management in water impoundments discussed include controlled burning, crushing and mowing, herbicides, wetland farming, tillage farming, and mudflat farming. Herbicides listed include 2,4-D, 2,4,5-T, Tordon, Simazine, and Atrazine.]

(KVM abstract)

Citation Number 286
AUTHOR: MacConnell, W. P.
TITLE: Habitat manipulation with modern herbicides.
SOURCE: Transactions of the Northeastern Section of the Wildlife Society.
VOLUME: 25
PAGE(S): 11-23
YEAR: 1968

Citation Number 287
AUTHOR: Malefyt, J. J. de Wall
TITLE: Effects of herbicide spraying on breeding songbird habitat along electric transmission rights-of-way.
SOURCE: In: W. R. Byrnes and H. A. Holt (ed.). Proceedings of the Fourth National Symposium, Environmental Concerns in Rights-of-way Management. Mississippi State University.
PAGE(S): 28-33
YEAR: 1987

Songbird density and indices of species richness and similarity were examined before and after application of herbicides by basal, stump, foliar, and aerial methods. Significant decreases in songbird densities were observed on aerially sprayed ROW and on some foliar and stump treated ROW. The greatest decrease (64%) occurred on an aerially sprayed ROW where songbird density decreased from 3.6 to 1.3 birds/ha after treatment. The smallest changes in density (0 and 6%) were observed on basally treated ROW. The species similarity index showed that songbird species following basal and stump treatments were more similar to each other than species on aerial and foliar treated ROW, with the latter two treatments also being similar to each other. ... Total breeding bird density was positively correlated with shrub cover and to a lesser extent with tree cover. Songbird density was negatively correlated with herbaceous plant cover. These results show that breeding songbird habitat on transmission ROW can be significantly affected by commonly-used vegetation maintenance techniques. This is especially true where sites have a moderate to heavy cover of undesirable trees and where extensive areas are defoliated by foliar and aerially sprayed herbicides. [Herbicides used include 2,4-D, picloram and triclopyr.]

(Author's abstract)

Citation Number 288
AUTHOR: Martin, N. S.
TITLE: Sagebrush control related to habitat and sage grouse occurrence.
SOURCE: Journal of Wildlife Management.
VOLUME: 34
PAGE(S): 313-320
YEAR: 1970

The effects of chemical manipulation of big sagebrush (Artemisia tridentata) on sage grouse (Centrocercus urophasianus) were studied in Montana during the summers of 1962 through 1964. The principal study was conducted on 1,900 acres, of which, 1,710 had been strip-sprayed in 1961 with 2,4 D. ... The similarity of vegetation at grouse locations and in the unsprayed strip led to the conclusion that differences in numbers of sage grouse observed in sprayed and unsprayed strips were related to vegetation composition. ... Favored food plants were more abundant in the unsprayed than in the sprayed strip, supporting the conclusion that differences in numbers of sage grouse observed in unsprayed and sprayed strips were related to vegetation composition.

(Author's abstract)

Citation Number 289
AUTHOR: Pase, C. P., P. A. Ingebo, E. A. Davis and C. Y. McCullough.
TITLE: Improving water yield and game habitat by chemical control of chaparral.
SOURCE: Proceedings of the IUFRO World Congress.
VOLUME: 14
PAGE(S): 463-486
YEAR: 1967

Citation Number 290
AUTHOR: Perkins, C. J., G. A. Hurst and E. R. Roach
TITLE: Relative abundance of small mammals in young loblolly pine plantations.
SOURCE: Proceedings of the Fifth Biennial Southern Silvicultural Research Conference, United States Department of Agriculture, Forest Service, General Technical Report.
VOLUME: SO-74
PAGE(S): 589-591
YEAR: 1988

Trapping indices for small mammals on bedded loblolly pine (Pinus taeda) plantations, age 1-3 years, were 20.6, 18.7, and 14.0; and on herbicide site prepared plantations, age 1-4 years, were 29.9, 16.6, 14.1, and 11.3. The index was 0.22 for mature pine-hardwood forests, Kemper County, Mississippi. [Herbicides used were 2,4-D and 2,4,5-T. Small mammals listed include cotton rat, rice rat, house mouse, white-footed mouse, and short-tailed shrew.]
(Authors' abstract)

Citation Number 291
AUTHOR: von Schuckmann, S.
TITLE: The implications of brush control to wildlife and fish.
SOURCE: Proceedings of the Vegetation Management Symposium, Association of British Columbia Professional Foresters.
VOLUME:
PAGE(S): 63-76
YEAR: 1986

Citation Number 292
AUTHOR: Thomas, J. D. and E. Buckner.
TITLE: Re-establishing yellow pine habitat for the red cockaded woodpecker on the Cumberland Plateau.
SOURCE: Proceedings of the First Biennial Southern Silvicultural Research Conference, United States Department of Agriculture, Forest Service, General Technical Report.
VOLUME: SO-34
PAGE(S): 358-361
YEAR: 1980

Developing inexpensive silvicultural systems for increasing the pine component of forests on the Cumberland Plateau is essential for maintaining a population of red cockaded woodpeckers in that area. Site preparation and hardwood control techniques considered feasible and acceptable on the Catoosa Wildlife Management Area were tested; these included: (1) burning, (2) fire plowing, (3) drum chopping, and (4) a velpar treatment. ... The effectiveness of the hardwood control treatments was evaluated by recording for each planting "spot" the likelihood that an extablished pine seedling...would outgrow hardwood competition. Both fire plowing and drum chopping significantly reduced hardwood competition.

(Authors' abstract)

Citation Number 293
AUTHOR: Wallestad, R.
TITLE: Male sage grouse responses to sagebrush treatment.
SOURCE: Journal of Wildlife Management.
VOLUME: 39
PAGE(S): 482-484
YEAR: 1975

Male sage grouse (Centrocercus urophasianus) populations on six central Montana strutting grounds were studied in relation to sagebrush (Artemisia tridentata) treatment [2,4-D or mechanical]. Populations on 3 strutting grounds within 0.5 km of treated areas increased 28 percent, whereas 2 grounds farther than 4 km from treated areas increased 323 percent. Over a 2-year period, a 31 percent loss of suitable habitat within 0.5 km of another strutting ground resulted in a 63 percent decrease in numbers of strutting males.

(Author's abstract)

AUTHOR INDEX

ALLEN, D. L. - 1
AMMAN, G. A. - 2
ANDERSON, A. E. - 3
ANDERSON, D. M. - 92
ANTHONY, R. G. - 4
ARCHIBALD, R. - 204
ARNOLD, P. A. - 95
ARNER, D. H. - 5, 6, 110, 115
BALL, E. W. - 7, 8
BAREISS, L. J. - 98
BARRETT, G. W. - 229
BARRONS, K. C. - 9, 10
BARTOLOME, J. - 281
BEARDMORE, R. A. - 265
BEASOM, S. L. - 11, 12, 266
BEAVER, D. L. - 13
BECK, R. A. - 14, 15
BEEMAN, L. - 16
BELLROSE, F. C. - 17
BESADNY, C. D. - 18
BEST, L. B. - 19
BLACK, H. C. - 21, 23
BLAKE, P. M. - 20, 121, 273, 274
BLANKENSHIP, L. H. -246
BOAG, D. A. - 79
BOLEN, E. G. - 228
BORRECCO, J. E. - 21, 22, 23
BOVEY, R. W. - 24
BOURLAND, T. R. - 116
BRAMBLE, W. C. - 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 275, 276, 277, 278
BRAUN, C. E. - 279
BRITT, T. - 279
BROWN, E. R. - 42
BROWN, P. W. - 211, 212
BROWNFIELD, M. - 11
BRUNER, A. D. - 82, 83
BUCKHOLTZ, K. P. - 103
BUCKNER, E. - 292
BULL, E. L. - 43
BUSH, P. B. - 183
BUTTERY, R. F. - 44, 87
BYRNES, W. R. - 25, 26, 27, 28, 30, 31, 33, 34, 36, 37, 38, 39, 40, 41, 215, 275, 276, 277, 278
CAIN, S. A. - 153
CAMPO, J. J. - 45
CARLSON, R. A. - 46
CARPENTER, L. H. - 47, 48
CARR, H. D. - 49
CARTER, M. C. - 50, 51

CARVELL, K. L. - 52
CAUSEY, M. K. - 50, 51
CAVANAGH, J. B. - 53
CHAMBERLAIN, E. B. - 54, 55
CHAPPELL, W. E. - 253, 254
CHASKO, G. G. - 56
CHEN, M. Y. - 57
CHRISTENSEN, M. D. - 58
CLOUGH, G. C. - 59
COLE, E. C. - 194
CONLEY, W. H. - 92
CONNER, R. N. - 60, 61
COPELAND, J. D. - 62, 63, 280
COULTER, L. L. - 64
CRAN, H. J., Jr. - 65
CRAWFORD, H. S. - 66, 102
CREED, W. A. - 168
CROUCH, G. L. - 67
CUMMINGS, M. W. - 68
DAHL, B. E. - 227
D'ANIERI, P. - 69, 70
DARDEN, T. L. - 71, 264
DARR, G. W. - 72, 73
DAVIS, C. A. - 92
DAVIS, E. A. - 289
DEFAZIO, J. T. - 74, 75, 76
DEWEESE, L. R. - 95
DIAZ-COLON, J. D. - 24
DICKSON, J. G. - 61, 77
DODD, J. D. - 78, 133, 134
DUNKESON, R. L. - 155
DWERNYCHUK, L. W. - 79
EASLEY, J. M. - 80
EATON, R. H. - 81
ECKERT, R. E., Jr. - 82, 83, 84, 88
EGLER, F. E. - 85, 86
EHRENREICH, J. H. - 87
ENGLE, D. M. - 179, 226
EVANS, R. A. - 58, 88
FAGERSTONE, K. A. - 89
FORD, C. R. - 76
FOSTER, C. H. W. - 90
FOSTER, J. R. - 95
FREEDMAN, B. - 91
GATES, J. E. - 56, 81, 147, 151
GIBBENS, R. P. - 92
GLOVER, F. A. - 49
GOODRICH, T. K. - 54

GOODRUM, P. D. - 93, 94
GOODWIN, R. H. - 196, 197
GRUE, C. E. - 95
GRUVER, B. J. - 96, 97
GUIAO, A. - 92
GUTHERY, F. S. - 97, 98
GYSEL, L. W. - 99, 100, 101
HALLS, L. K. - 102
HALVORSON, C. H. -251
HAMILTON, K. C. - 103
HANSEN, H. L. - 138, 139, 140, 141, 142, 144, 145
HANSEN, R. M. - 104, 129, 132
HANSON, W. R. - 105
HARESTAD, A. S. - 204
HARGER, E. M. - 158
HARLOW, R. F. - 106, 107
HARRIS, L. D. - 108, 109
HARTLEY, D. R. - 110
HARTMAN, G. F. - 111
HEADY, H. F. - 281
HEATH, R. G. -272
HEGDAL, P. L. -251
HERBEL, C. H. - 92
HIRTH, D. H. - 109
HOGUE, E. J. - 242
HOLECHEK, J. L. - 282
HOOVEN, E. F. - 21, 23
HOREJSI, R. G. - 112
HUCKINS, J. N. - 95
HUDDLESTON, E. W. - 92
HULL, A. C., Jr. - 113
HUNT, R. W. - 141, 142
HUNTLEY, J. C. - 114, 115
HURST, G. A. - 45, 62, 63, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 175, 247, 264, 274, 283, 290
HUTNIK, R. J. - 28, 278
INGEBO, P. A. - 289
INGLIS, J. M. - 246, 284
JACOBY, G. E. - 181
JAHN, L. R. - 126
JENKINS, B. C. - 127
JOHNSON, A. M. - 251
JOHNSON, D. R. - 128, 129
JOHNSON, F. L. - 169, 170
JOHNSON, J. C. - 130
JOHNSON, R. R. - 131
JOHNSTON, M. H. - 265
JURRIES, R. - 78
KABAT, C. - 18, 250

KEITH, J. O. - 132
KENNAMER, J. E. - 50, 51
KESSLER, W. B. - 133, 134
KIMMEL, R. O. - 135
KIRKLAND, G. L., Jr. - 136
KIRKPATRICK, C. M. - 252
KLEBENOW, D. A. - 73, 137
KLOMP, G. J. - 82, 83
KOERTH, B. H. - 221
KREFTING, L. W. - 138, 139, 140, 141, 142, 143, 144, 145
KROLL, J. C. - 60
KUFELD, R. C. - 146
KULHAVY, D. L. - 60
LADINO, A. G. - 147
LANDES, R. K. - 148
LAUTENSCHLAGER, R. A. - 149, 194
LAVOIE, G. K. - 89
LAWRENCE, W. H. - 150
LAWSON, B. A. - 151
LEE, D. V. - 152
LEONARD, J. W. - 153
LESLIE, D. M., Jr. - 69, 70, 179, 211, 212, 226
LEWIS, J. B. - 155
LINDE, A. F. - 285
LINDEMANN, W. C. - 92
LINDZEY, J. S. - 156
LIPE, J. W. - 110
LOCHMILLER, R. L. - 179, 226
LOCKE, B. A. - 61
LOWERY, R. F. - 247
LUDDEN, A. P. - 95
LYON, L. J. - 157
MACCONNELL, W. P. - 286
MACMULLAN, R. A. - 158
MACRIGEANIS, S. N. - 53
MALECKI, R. A. - 159
MALEFYT, J. J. DE WALL - 160, 161, 287
MARRION, W. R. - 109
MARSHALL, W. K. - 95
MARTIN, A. C. - 162
MARTIN, N. S. - 163, 288
MARTIN, R. P. - 164
MARTIN, J. W. - 50, 51
MARTOGLIO, L. D. - 169, 170
MAY, D. E. - 165
MAY, T. A. - 165
MAYER, T. D. - 166
MCARTHUR, L. B. - 167
MCCAFFERY, K. R. - 168, 169, 170

MCCOMB, W. C. - 171, 172, 173, 174, 175, 181
MCCORMACK, M. L. Jr. - 69, 70, 165, 176, 184, 194
MCCULLOCH, C. Y. - 224, 289
MCGILVREY, F. B. - 177
MCKEE, B. - 178
MCMURRY, S. T. - 179
MCPEEK, G. A. - 180, 181
MESLOW, E. C. - 186, 187, 188
MILLER, H. A. - 182
MILLER, K. V. - 183
MILLER, S. K. - 76
MINEAU, P. - 95
MORASH, R. - 91
MORGAN, R. H. - 184
MORIARTY, J. J. - 181
MORRISON, M. L. - 4, 185, 186, 187, 188
MORTON, H. L. - 92
MUEGGLER, W. F. - 157, 189
MULLISON, W. R. - 190
MURRAY, R. B. - 191
MUTZ, J. L. - 219
NEWTON, M. - 192, 193, 194
NIERING, W. A. - 195, 196, 197
NORRIS, L. A. - 193
OLSON, D. P. - 53
OLIVERI, S. F. - 198
OSAKI, S. K. - 199
PALMER, W. E. - 124
PARNELL, J. F. - 269
PARTRIDGE, A. D. - 43
PASE, C. P. - 289
PERKINS, C. J. - 200, 290
PETERSON, F. F. - 83
PLETSCHER, D. H. - 201
POIRIER, A. M. - 91
POPOV, B. H. - 126
QUIMBY, D. C. - 202
RAWINSKI, T. J. - 159
REID, V. H. - 93
REITZEL, J. A. - 92, 203
RICHMAN, D. B. - 92
RITCHIE, D. C. - 204
ROACH, E. R. - 290
ROBEL, R. J. - 201
ROE, E. T. - 205
ROGERS, M. J. - 222
ROLLINGS, C. T. - 206
ROTENBERRY, J. T. - 267
RUCH, L. C. - 207, 208, 272

RUMSEY, R. L. - 171, 172, 173, 174
RUSCH, A. J. - 18
RUSSELL, C. E. - 98
RYDER-WHITE, J. A. - 92
SANTILLO, D. J. - 209, 210, 211, 212
SAVIDGE, J. A. - 213, 214
SCHEMNITZ, S. D. - 215, 216
SCHMITT, J. B. 223
SCHREIBER, R. K. - 16
SCHROEDER, M. H. - 217, 218
SCHULER, M. D. - 40, 41
SCIFRES, C. J. - 11, 12, 219, 220, 221, 266
SCOTT, F. - 91
SEGELQUIST, C. A. - 222
SHAW, M. - 249
SHEEHAN, P. J. - 95
SHIELDS, P. W. - 44
SHIPMAN, R. D. - 223
SHORT, H. L. - 224
SHUPE, T. E. - 98
SKEEN, J. - 249
SLAGSVOLD, T. - 225
SOOTS, R. F. - 269
SOPER, R. B. - 226
SOSEBEE, R. E. - 227
SOUTIERE, E. C. - 228
SPENCER, S. R. - 229
STAMM, K. - 230
STEENIS, J. H. - 231, 232, 233, 234
STENLUND, M. H. - 138, 139
STEUTER, A. A. - 235
STONE, A. E. - 75, 76, 236
STRODE, D. D. - 237
STURGES, D. L. - 218
SULLIVAN, D. S. - 238, 239, 240
SULLIVAN, T. P. - 238, 239, 240, 241, 242, 243, 244, 245
SWANSON, G. A. - 95
TANNER, G. W. - 246
TAYLOR, J. W. - 183
TERRY, T. A. - 247
THACKSTON, R. - 249
THARP, J. E. - 248
THOMAS, J. D. - 292
THOMAS, T. A. - 274
THOMPSOM, M. - 249
THOMPSON, R, - 250
THOMSON, I. - 260
TIETJEN, H. P. - 89, 251
TORREY, D. S. 252

TRUMBO, H. A. - 253, 254
TURRENTINE, J. M. - 255
UMBER, R. - 249
URNESS, P. J. - 256
VALLENTINE, J. F. - 257
VANETTEN, R. C. - 258, 259, 260
VAN LEAR, D. H. - 106, 107
VONSCHUCKMANN, S. - 291
WALLESTAD, R. O. - 279, 293
WARBACH, O. - 261
WARD, A. L. - 104, 132, 262
WARD, F. D. - 222
WARREN, J. - 234
WARREN, R. C. - 117, 118, 119, 120, 247, 263, 264
WARREN, R. J. - 75, 76
WATKINS, R. M. - 265
WEICHERT, A. T. - 78, 133
WHITE, D. E. - 194
WHITNEY, M. D. - 183
WHITSON, R. E. - 266
WIENS, J. A. - 267
WILBERT, D. E. - 268
WORLEY, D. P. - 26, 27
WORSHAM, A. D. - 269
YOUNG, J. A. - 58, 88, 270
ZEDAKER, S. M. - 69
ZORB, G. L. - 271, 272

WILDLIFE SPECIES INDEX

Wildlife species and categories referred to in reference citations or in abstracts. Additional wildlife species or groupings referred to in the text of the original references are not indexed here. (Mammalian scientific names and taxonomic classification follows Honacki, J. H. et al. 1982. Mammal Species of the World: A taxonomic and geographic reference. Association of Systematics Collections, Lawrence, Kansas).

General Wildlife 1, 5, 6, 9, 10, 14, 15, 16, 18, 24, 25, 26, 27, 32, 36, 38, 39, 45, 46, 47, 50, 51, 52, 53, 57, 64, 65, 77, 84, 85, 86, 87, 88, 90, 93, 94, 95, 98, 100, 101, 105, 106, 107, 108, 109, 111, 116, 131, 144, 147, 148, 150, 152, 153, 156, 157, 165, 166, 169, 170, 171, 175, 176, 182, 184, 190, 191, 192, 193, 194, 195, 196, 197, 198, 200, 205, 216, 217, 220, 221, 222, 223, 224, 227, 230, 233, 237, 247, 250, 253, 254, 257, 259, 261, 265, 270, 271, 272, 275, 276, 281, 285, 286, 289

Mammals (general) 186, 243

- Small Mammals (general) 4, 21, 58, 59, 91, 92, 136, 179, 183, 199, 200, 209, 210, 211, 213, 214, 216, 227, 240, 241, 251, 282
  - Shrews (Soricidae) 136, 240, 245
    - Pygmy shrew (Sorex hoyi) 69, 70
    - Short-tailed shrew (Blarina brevicauda) 172, 290
    - Masked shrew (Sorex cinereus) 69, 70, 209
    - Smoky shrew (S. fumeus) 172
    - Vagrant shrew (S. vagrans) 23
    - Trowbridge shrew (S. trowbridgii) 23
  - Mice (Cricetidae) 136
    - Deer mouse (Peromyscus maniculatus) 23, 69, 70, 128, 129, 204, 239, 240, 242, 244, 245
    - Oldfield mouse (P. polionotus) 76
    - White-footed mouse (P. leucopus) 76, 172, 290
    - Golden mouse (Ochrotomys nuttalli) 172
    - Cotton rat (Sigmodon hispidus) 290
    - Rice rat (Oryzomys palustris) 290
  - Mice (Muridae)
    - House mouse (Mus musculus) 287
  - Jumping mice (Zapodidae)
    - Pacific jumping mouse (Zapus trinotatus) 23

Voles/Muskrat (Arvicolidae) 136
Meadow vole (Microtus pennsylvanicus) 229, 242
Montane vole (M. montanus) 128, 129, 242
Oregon vole (M. oregoni) 4, 23, 240, 244, 245
Pine vole (Pitymys pinetorum) 172
Boreal redbacked vole (Clethrionomys gapperi) 69, 70
Muskrat (Ondotra zibethicus) 252

Pocket gophers (Geomyidae) 68
Mazama pocket gopher (Thomomys mazama) 67,
Northern Pocket gopher (T. talpoides) 104, 113, 129, 132, 242, 251

Sciurids (Sciuridae)
Chipmunk (Tamias spp.) 214
Townsend chipmunk (T. townsendii) 240, 245
Yellow pine chipmunk (T. amoenus) 242
Least chipmunk (T. minimus) 128, 129
Eastern chipmunk (T. striatus) 172
Squirrels (Sciurus spp.) 29, 30, 31, 54
Woodchuck (Marmota monax) 127
Black-tailed prairie dogs (Cynomys ludovicianus) 89

Rabbits (Leporidae) 18, 28, 29, 30, 31, 34, 54, 99, 125, 178, 207, 208, 215
Cottontail rabbit (Sylvilagus sp.) 110
Varying hare (Lepus americanus) 149, 199

Carnivores (Carnivora)
Coyote (Canis latrans) 235
Bear (Ursus spp.) 216
Raccoon (Procyon lotor) 54

Suids (Suidae)
Javelina (Tayassu tajacu) 12, 284
Hogs (Sus scrofa) 12

Cervids (Cervidae)
Deer (Odocoileus spp.) 42, 48, 94, 184, 189, 235, 241, 256
White-tailed deer (O. virginianus) 11, 12, 20, 28, 29, 30, 31, 33, 34, 37, 54, 55, 62, 63, 66, 72, 73, 74, 75, 80, 81, 99, 102, 110, 112, 117, 118, 119, 120, 121, 122, 123, 124, 125, 127, 130, 138, 139, 140, 141, 142, 143, 144, 145, 149, 152, 155, 168, 178, 183, 202, 207, 208, 215, 219, 226, 246, 247, 249, 260, 263, 266, 273, 274, 277, 278, 280, 282, 283, 284
Mule deer (O. hemionus) 3, 146, 199, 202, 213, 214, 282
Black-tailed deer (O. h. columbianus) 21, 22, 238, 241
Elk (Cervus elaphus canadensis) 42, 146, 189, 202, 262, 268, 282
Moose (Alces alces) 149, 202, 282

Bovids (Bovidae)
Nilgai antelope (Boselaphus tragocamelus) 12
Bighorn sheep (Ovis canadensis) 202, 282
Pronghorn antelope (Antilocapra americana) 42, 202, 227, 282

Birds (general) 13, 18, 35, 40, 41, 43, 44, 56, 71, 91, 92, 96, 97, 103, 110, 124, 149, 151, 160, 161, 164, 167, 173, 174, 180, 181, 185, 186, 187, 188, 199, 200, 203, 209, 210, 212, 213, 216, 225, 227, 236, 241, 243, 263, 264, 267, 269, 278, 287

Waterfowl (general) 7, 8, 17, 79, 95, 96, 126, 127, 158, 159, 162, 177, 206, 231, 232, 233, 234, 252

Raptors (general) 216, 227

Grouse (Tetraonidae) 216
Ruffed grouse (Bonasa umbellus) 28, 29, 30, 31, 34, 54, 99, 135, 207, 208, 215, 260
Sage grouse (Centrocercus urophasianus) 42, 49, 82, 83, 137, 163, 202, 279, 282, 288, 293
Sharp-tailed grouse (Pedioecetes phasianellus) 2, 127, 207, 208, 258

Quail/Pheasants (Phasianidae)
Bobwhite quail (Colinus virginianus) 80, 96, 114, 115, 124, 125, 183, 201, 235, 248, 255, 282, 284
Scaled quail (Callipela squamata) 248, 284
Attwater's prairie chicken (Tympanuchus cupido attwateri) 78, 133, 134
Ring-necked pheasant (Phasianus colchicus) 18

Wild turkey (Meleagris gallopavo) 12, 28, 29, 30, 31, 34, 54, 125, 135, 155, 183, 215, 216, 282

Mourning dove (Zenaida macroura) 228, 282

Woodpeckers (Picidae) 60, 61, 216

Perching birds (Passeriformes)
Sage sparrow (Amphispiza belli) 267
Brewer's sparow (Spizella breweri) 19, 218, 267, 282
Lincoln's sparrow (Melospiza lincolnii) 212
Common yellow-throats (Geothlypis trichas) 212
Alder flycatcher (Empidonax alnorum) 212
Vesper's sparrow (Pooecetes gramineus) 19, 282

PLANT SPECIES INDEX

Plant species referred to in reference citations or in abstracts. Additional plant species referred to in the text of the original references are not indexed.

Abies balsamea, Balsam fir, 69, 149, 165, 184, 194
Acer saccharum, Sugar maple, 259, 260
A. spicatum, Mountain maple, 138, 139, 140, 144
Achillea lanulosa, Western Yarrow, 83
Agropyron crisatum, Crested wheatgrass, 267
A. intermedium, Intermediate wheatgrass, 58
A. repens, Quack grass, 250
A. trachycaulum, Slender wheatgrass, 83
Alnus spp., Alder, 162, 238
Aloysia lycioides, Whitebrush, 219
Alternanthera philoxeroides, Alligatorweed, 7, 162, 177, 233
Ambrosia artemisiifolia, Ragweed, 201
Amelanchier spp., Serviceberry, 155
A. alnifolia, Saskatoon serviceberry, 131
Andropogon spp., Broomsedge, 183
Artemisia tridentata, Sagebrush 3, 19, 48, 49, 82, 88, 137, 163, 202, 218, 256, 262, 267, 268, 279, 281, 288, 293
Aster spp., Aster, 33
Baccharis halimifolia, Baccharis, 7
Borrichia frutescens, Sea oxeye, 7
Bromus tectorum, Downy brome, 58, 88
Carex spp., Sedge, 145, 158
C. pensylvanica, Vernal sedge, 29, 34, 39
Carya spp., Hickory, 25, 155, 249
Ceanothus sanguineus, Redstem ceanothus, 157
C. velutinus Snowbrush ceanothus, 214
Cephalanthus occidentalis, Buttonbush, 17, 162
Ceratophyllum demersum, Coontail, 17
Chamaedaphne calyculata, Leatherleaf, 126, 158
Chrysothamnus spp., rabbitbush, 88
Comptonia peregrina, Sweetfern, 33, 39
Cornus spp., Dogwoods, 144, 155
Corylus spp., Hazel, 145
C. americana, American hazel, 144
C. cornuta, Beaked hazel, 144
Croton spp., Croton/Doveweed, 98, 283
Cynodon dactylon, Bermuda grass, 183
Dennstaedtia punctilobula, Hayscented fern, 39
Eichornia crassipes, Waterhyacinth, 7, 162, 233
Erechtites hieracifolia, Fireweed, 28, 29, 34
Fraxinus spp., Ash, 155
Gaultheria procumbens, Teaberry, 26
Gaylussacia spp., Huckleberry, 27, 28, 29
Glycine max, Soybean, 103

Hamamelis virginiana, Witchhazel, 33, 39
Helianthus annuus, Common sunflower, 98, 201
Hibiscus spp., Rosemallow, 162
Hilario mutica, Tobosa grass, 228
Iris missouriensis, Rocky Mountain iris, 83, 84
Juncus roemerianus, Needlerush, 7, 162, 233, 234
Juniperus spp., Juniper, 72, 224
Jussiaea diffusa, Water primrose, 7
Jussiaea grandiflora, Water primrose, 7
Larix leptolepis, Japanese larch, 223
Leersia orzoides, Rice cut-grass, 17
Lespedeza spp., 122
L. bicolor, Bicolor lespedeza, 261
Lonicera japonica, Japanese honeysuckle, 222, 261
Lysimachia quadrigfolia, Loosestrife, 33, 34, 39
Lythrum salicaria, Purple loosestrife, 159
Medicago sativa, Alfalfa, 238
Melochia corchorifolia, Chocolate-weed, 7
Myrica serifera, Wax myrtle, 7
Myriophyllum spicatum, Eurasian watermilfoil, 233
Nelumbo lutea, American lotus, 17, 231
Nelumbo pentapetala, Wonkapin, 7, 162
Nuphar spp., Spatterdock, 162
N. advena, Spatterdock, 7
Nymphaea spp., Waterlily, 162
N. advena White water-lily, 17
N. odorata, Fragrant water-lily, 7
Nyssa spp., Gum, 155
Oryza sativa, Rice, 133, 134
Panicum spp., Panic grass/Millet, 183, 159
P. hemitomon, Maidencane, 7, 8, 162
Peraphyllum ramosissimum, Squaw-apple, 131
Phragmites communis, Phragmites, 14, 15, 162, 233
Phytolacca americana, Pokeweed, 283
Picea spp., Spruce, 69, 149, 165, 194
Pinus spp., Pine, 118, 119, 154, 236, 263, 292
P. banksiana, Jack pine, 142, 145
P. echinata, Shortleaf pine, 57, 61, 71, 180
P. edulis, Pinyon pine, 224
P. jeffreyi, Jeffrey pine, 199, 214
P. palustris, Longleaf pine, 237
P. ponderosa, Ponderosa pine, 58, 67
P. resinosa, Red pine, 99
P. rigida, Pitch pine, 180
P. taeda, Loblolly pine, 20, 45, 57, 61, 62, 63, 71, 80, 120, 121, 122, 123, 124, 125, 178, 183, 247, 264, 265, 273, 274, 280, 283, 290
Poa spp., Bluegrass, 250
P. nevadensis, Nevada bluegrass, 83
Populus tremuloides, Quaking aspen, 142, 260

Prosopis spp., Mesquite, 11, 12, 72, 92, 97, 112, 203, 227, 228, 248
Prunus virginiana, Chokecherry, 144
Pseudotsuga menziesii, Douglas fir, 21, 22, 23, 239, 240, 245
Pteridium aquilinum, Bracken, 29, 33, 34, 39
Purshia tridentata, Bitterbrush, 58, 191
Quercus spp., Oaks, 25, 37, 99, 142, 155, 237, 249, 255
Q. falcata, Southern Red oak, 60
Q. gambelli, Gambel oak, 131, 146
Q. ilicifolia, Bear oak, 33
Q. marilandica, Blackjack oak, 164, 179
Q. stellata, Post oak, 164, 179
Raphanus spp., Wild radish, 7
Rubus spp., Blackberry, 122, 278, 283
R. allegheniensis, Blackberry, 39, 45
R. hispidus, Dewberry, 39
Sagittaria lancifolia, Duck-potato, 7, 17
Salix spp., Willow, 7, 162
S. nigra, Black willow, 17
Sassafras spp., Sassafras, 33
Scirpus spp., Sedge, 158
Sesbania macrocarpa, Sesbania, 7
Setaria faberii, Giant foxtail, 229
Solidago spp., Goldenrod, 33, 39
Symphoricarpos rotundifolius, Roundleaf snowberry, 131
Taeniatherum asperum, Medusahead, 58
Tamarix gallica, Saltcedar, 162
Taraxacum officinale, Common dandelion, 83
Trapa natans, Waterchestnut, 162, 233
Typha spp., Cattail, 7, 8, 162, 233
Ulmus spp., Elm, 155
Vaccinium spp. Blueberry, 26, 28, 29, 34, 39, 66
Viburnum rafinesquianeum, Arrow-wood, 144
Vitis spp., Grape, 66, 155
Zea mays, Corn, 103
Zizaniopsis miliacea, Giant cutgrass, 7, 8, 162, 231

PRIMARY LAND USE INDEX

Land uses referred to in the original references were divided into 6 categories as follows:

General Land Use--1, 9, 10, 24, 54, 93, 150, 153, 182, 186, 190, 192, 193, 230, 243, 291

Wildife Habitat Improvement (upland)--2, 14, 15, 43, 46, 60, 61, 64, 86, 98, 103, 111, 131, 138, 139, 140, 141, 142, 143, 144, 145, 146, 148, 155, 156, 157, 168, 169, 170, 171, 172, 173, 174, 180, 181, 189, 191, 201, 207, 208, 222, 223, 224, 230, 249, 250, 253, 254, 257, 258, 259, 260, 261, 269, 271, 272, 286, 289, 292

Wildlife Habitat Improvement (wetland)--7, 8, 14, 15, 17, 64, 79, 95, 105, 126, 127, 158, 159, 162, 177, 206, 231, 232, 233, 234, 252, 285

Timber Management/Site prep.--4, 13, 20, 21, 22, 23, 45, 50, 51, 54, 55, 57, 58, 59, 62, 63, 67, 69, 70, 71, 74, 75, 76, 77, 80, 91, 93, 94, 99, 106, 107, 108, 109, 116, 117, 118, 119, 120, 121, 123, 124, 125, 130, 136, 143, 149, 150, 152, 165, 167, 172, 173, 175, 176, 178, 183, 184, 185, 186, 187, 188, 192, 194, 198, 199, 200, 204, 205, 209, 210, 211, 212, 213, 214, 216, 217, 225, 229, 236, 237, 238, 239, 240, 241, 242, 244, 245, 247, 263, 264, 265, 273, 274, 280, 283, 290

Right-of-Way Management--5, 6, 16, 18, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 52, 53, 56, 65, 81, 85, 90, 100, 101, 110, 114, 115, 135, 147, 151, 160, 161, 166, 195, 196, 197, 215, 275, 276, 277, 278, 287

Range Management--3, 11, 12, 19, 42, 44, 47, 48, 49, 66, 68, 72, 73, 78, 82, 83, 84, 87, 88, 89, 92, 93, 96, 97, 102, 104, 112, 113, 128, 129, 132, 133, 134, 137, 150, 157, 163, 164, 179, 189, 196, 197, 202, 203, 217, 218, 219, 220, 221, 224, 226, 227, 228, 235, 246, 248, 251, 255, 256, 257, 262, 266, 267, 268, 270, 279, 281, 282, 284, 288, 293

HERBICIDE INDEX

The herbicides referenced in this bibliography are contained in the following index. All herbicides mentioned in the reference have been indexed. Product names, trade names, common names, and formulations of the herbicides are listed in Appendix I).

2,3,6-TBA (trichlorobenzoic acid)
257

2,4-D (2,4-dichlorophenoxy acetic acid)
2, 3, 5, 7, 9, 17, 18, 19, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 47, 48, 49, 53, 57, 60, 61, 71, 78, 79, 82, 83, 84, 85, 88, 89, 90, 99, 103, 104, 105, 111, 113, 116, 125, 126, 128, 129, 131, 132, 133, 134, 138, 139, 140, 141, 142, 143, 144, 145, 148, 157, 162, 163, 165, 176, 185, 188, 189, 191, 194, 201, 202, 207, 208, 215, 218, 229, 230, 231, 232, 233, 234, 251, 257, 258, 261, 262, 263, 264, 267, 268, 271, 272, 275, 276, 281, 285, 287, 288, 290, 293

2,4,5-T [(2,4,5-trichlorophenoxy)acetic acid]
5, 9, 11, 12, 13, 18, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 45, 53, 57, 59, 61, 66, 71, 72, 73, 80, 85, 90, 91, 92, 96, 97, 99, 100, 101, 102, 111, 114, 115, 117, 118, 125, 126, 131, 136, 138, 139, 144, 148, 152, 155, 157, 164, 185, 188, 189, 194, 196, 197, 199, 203, 205, 207, 208, 213, 214, 215, 222, 225, 230, 237, 246, 253, 254, 257, 263, 264, 266, 275, 276, 285, 290

amitrole (3-amino-5-triazole); (3-amino-1,2,4-triazole)
7, 15, 80, 117, 148, 206, 233, 257

ammate (ammonium sulfamate)
25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 90, 158, 215, 231, 232, 253, 254, 275, 276

aquathol (see endothall)
252

atlacide (sodium chlorate)
232

atrazine [2-chloro-4-(ethylamino)-6-(isopropylamino)-s-triazine]
21, 22, 23, 58, 67, 148, 176, 257, 285

bladex (2-[4chloro-6-(ethylamino)-s-triazin-2-amino]-2-methylpropionitrile)
148

bromacil (5-bromo-3-sec-butyl-6-methyluracil)
98, 269

CIPC [chloro isopropyl-(3 chlorophenol) carbamate]
103

CMU [3-(p-chlorophenyl)-1, 1-dimethylurea]
103

dalapon (2,2-dichloropropionic acid)
7, 8, 15, 127, 148, 158, 206, 230, 233, 250, 257, 271, 272

diclorprop [2-(2,4-dichlorophenoxy) propionic acid)
80, 117, 131, 277, 278

dicamba (3,4-dichloro-anisic acid)
88, 133, 134, 148, 257

dichlobenil (2,6-dichlorobenzonitrile)
269

diuron [3-(3,4-dichlorophenyl)-1,1-dimethylurea]
98, 269

DN (2-sec-butyl-4,6 dinitrophenol)
103

endothal (3,6-endoxohexahydrophthalate)
103, 148

erbon [2-(2,4,5-trichlorophenoxy) ethyl 2,2-dichloro-propionate]
15, 206

fenac [(2,3,6-trichlorophenyl) acetic acid]
257

fenuron (3-phenyl-1,1-dimethylurea)
223, 253, 254

fluroxypyr (4-amino-3,5-dichloro-6-fluro-2-pyridyloxy-acitic acid)
183

fosamine (ammonium ethyl carbamoylphosphonate)
176

glyphosate [N-(phosphonomethyl) glycine]
4, 69, 70, 159, 165, 176, 187, 194, 204, 209, 210, 211, 212, 238, 239, 240, 241, 242, 243, 244, 245, 257

hexazinone [3-cyclohexyl-6-(dimethylamino)-1-methyl-1,3,5 triazine-2,4 dione]
20, 62, 63, 98, 120, 121, 124, 125, 176, 183, 247, 249, 273, 274, 280, 283, 292

imazapyr (2-[4,5-dihydro-4-methyl-4 (1-methylethyl)-5-oxo-1H-imidazol-2-yl]-3-pyridine carboxylic acid)
122, 123, 125, 265, 283

karbutilate [m-(3,3-dimethylureido) phenyl-tert-butylcarbamate]
257, 269

MCPA [(4-chloro-o-tolyl)oxy]acetic acid; (2-methyl-4-chlorophenoxy-acetic acid)
24, 233

MCPB (4-[(4-chloro-o-tolyl)oxy]butyric acid); [4-(2-methyl-4-chloro-phenoxy)butyric acid]
24

mecoprop (2-(4-chloro-2-methylphenoxy)propionic acid); (2-[(4-chloro-o-tolyl)oxy]propionic acid)
24

metolachlor [2-chloro-N-(2-ethyl-6-methylphenyl-N-2,methoxy-1,methylethyl) acetamide]
98

MSMA (monosodium methanearsonate)
43, 176

oryzalin (3,5-dinitro-N^4, N^4-dipropylsulfanilamide)
98

oxyfluorfen ([2,chloro-1-(3-ethoxy-4-nitrophenoxy)-4-(trifluromethyl) benzene]
98

paraquat (1,1'dimethyl-4,4'-bipyridinium ion)
257

PBA (polychlorobenzoic acid)
258

picloram (4-amino-3,5,6-trichloropicolinic acid)
9, 11, 12, 56, 57, 88, 147, 148, 168, 169, 170, 171, 172, 173, 174, 176, 180, 181, 183, 235, 246, 249, 257, 266, 277, 278, 285, 287

prometone [2,4-bis(isopropylamino)-6-methoxy-s-triazine]
269

radapon (see dalapon)
14, 17

simazine [2-chloro-4,6-bis(ethylamino)-5-triazine]
98, 146, 148, 176, 184, 230, 269, 285

silvex [2-(2,4,5-trichlorophenoxy)propionic acid]
7, 9, 24, 80, 117, 131, 146, 148, 177, 233, 257, 258, 259, 260

tebuthiuron (N-[5-(1,1-dimethylethyl)-1,3,4-thiadiazol-2yl]-N, N-dimethylurea)
74, 75, 76, 88, 98, 179, 219, 221, 226, 236, 249, 257, 269

TCA (sodium salt of trichloroacetic acid)
103, 127, 148

triclopyr ([(3,5,6-trichloro-2-pyridinyl)oxy]acetic acid)
80, 165, 176, 179, 194, 226, 257, 277, 278, 287

ureabor (see bromacil)
206

APPENDIX I

Approved common names and product names of herbicides listed in this bibliography. Product names include most trade names and formulations of the listed herbicide. Product names are not an exhaustive list of available trade names; only the major names listed in the Farm Chemicals Handbook (1983), Weed Science Society of America Herbicide Handbook (1983), and USDA Forest Service Pesticide Background Statements are included.

2,3,6-TBA
Common Name: trichlorobenzoic acid
Product Names: Fen-all, TCBA, Trysben 200, Zobar

2,4-D
Common Name: 2,4-D
Product Names: Agrotectal, Amidox, Amoxone, Aqua-Kleen, Brush-Rhap, Chipco Turf Herbicide "D", Chloroxone, Crop Rider, Dacamine, Debroussaillant 600, Ded-Weed, Desormone, Dicotox, Dinoxol, DMA 4, Dormone, Emulsamine, Envert DT, Evert 171, Esteron 99 Concentrate, Esteron Four, Esteron Brush Killer, Estone, Farmco, Ferxone, Formula 40, Hedonol, Herbidal, Lawn-Keep, Macondray, Miracle, Plantgard, Rhodia, Salvo, Spritx-Hormin/2,4-D, Superormone Concentre, Super D Weedone, Transamine, Tributon, U 46, Wergemaster, Verton 2D, Visko-Rhap, Weed-B-Gon, Weedar, Weedatul, Weedone, Weed-Rhap, Weed Tox, Weedtrol

2,4,5-T
Common Name: 2,4,5-T
Product Names: Weedar, Weedone, Veon 245, Esteron 245 BE, Brush-Rhap A-4T, Brush-Rhap LV-OXY-4T

amitrole
Common Name: amitrole
Product Names: Amitrole-T, aminotriazole, Amizine (amitrole & simazine), Amizol, Fenamine (amitrole, fenac & atrazine)

ammate
Common Name: ammate
Product Names: Amcide, Ikurin, Sulfamate

aquathol see endothal

atlacide
Common Name: sodium chlorate
Product Names: Atlacide, De-fol-ate, Drexel Defol, Drop-leaf, Fall, Harvest-Aid,, Klorex, Kusatol, Rasikal, Tumbleaf

atrazine
Common Name: atrazine
Product Names: Aatrex 80W, Aatrex Nine-O, Aatrex 4L, Aatrex 4LC, Atratol 8P, Atratol 80W, Bicep 4.5L, Gesaprim, Lasso, Ramrod, Atrazine 4L Herbicide, Atrazine 80W Herbicide, CO-OP Liquid Atrazine, CO-OP Atrazine 80WP, CO-OP Atra-Pril 90% dry flowable

bladex
Common Name: cyanazine
Product Names: Bladex, SD 15418, WL 19805

bromacil
Common Name: bromacil
Product Names: Hyvar-X (80% bromacil). Hyvar-XL, Krovar I (40% bromacil, 40% diuron), Krovar II (53% bromacil, 27% diuron), Ureabor, Borocil (borate-bromacil), Urox B, Urox HA, Rout G-8 (bromacil-diuron)

CMU
Common Name: monuron
Product Names: Monurex, Telvar

CIPC
Common Name: chlorpropham
Product Names: Beet-kleen, Furloe, Sprout Nip, Spud-nic, Taterpex, Triherbide-CIPC, Unicrop CIPC

dalapon
Common Name: dalapon
Product Names: Dowpon (sodium salt), Dowpon M (sodium & magnesium salts), Radapon Liquid (sodium salt), Revenge, Dalapon 85

diclorprop
Common Name: dichlorprop, 2,4- DP
Product Names: Weedone 2,4-DP, Weedone 170, Envert 171, Cornox RK 64, Cornox RK,Tri-Cornox, Dichlorporp

dicamba
Common Name: dicamba
Product Names: Banvel D, Banvel 45, Banvel 4S, Banvel 4WS, Banvel II, Banvel CST, Tri-Cornox, Velsicol 58-CS-II

dichlobenil
Common Name: dichlobenil
Product Names: Casoron 133, Casoron G, Casoron G 20 Sr, Casoron G-4, Casoron W50, Casoron G-10

diuron
Common Name: diuron
Product Names: Karmex, Krovar I (40% diuron, 40% bromacil), Krovar II (27% diuron, 53% bromacil), Velpar K-4 (46.8% diuron, 13.2% hexazinone), Drexel Diuron 4L

DNBP
Common Name: dinitro, dinoseb
Product Names: Basanite, Caldon, Chemox General, Chemox PE, Chemsect DNBP, Dinitro, Dinitro-3, Dinitro General, Dynamyte, Elgetol 318, Gebutox, Hel-Fire, Kiloseb, Nitropone C, Premerge 3, Vertac Dinitro Weed Killer 5, Vertac General Weed Killer, Vertac Selective Weed Killer

endothal
Common Name: endothall, endothal
Product Names: Accelerate, Des-i-cate, Endothal Turf Herbicide, Endothal Weed Killer, Hydrothol 47, Hydrothol 191, Hydout, Aquathol K

erbon
Common Name: erbon
Product Names: Baron, Novege

fenac
Common Name: fenac, chlorfenac
Product Names: Fenatrol, Fenatrol Plus (fenac & 2,4-D), Fenavar (fenac, bromacil & amitrole), Fenavar Granular, Fenamine (fenac, atrazine & amitrole)

fenuron
Common Name: fenuron, trichloro-acetic acid
Product Names: GC 2603, Dozer

fluroxypyr
Common Name: fluroxypyr
Product Names: Starane

fosamine
Common Name: fosamine
Product Names: Krenite, Krenite S

glyphosate
Common Name: glyphosate
Product Names: Roundup, Rodeo, Glyphosate Technical

hexazinone
Common Name: hexazinone
Product Names: Velpar Weed Killer, Velpar Gridball, Velpar L, Velpar K, Borid V-4, Mobley V-4, Pronone 10G

imazapyr
Common Name: imazapyr
Product Names: Arsenal

karbutilate
Common Name: karbutilate
Product Names: Tandex

MCPA
Common Name: MCPA, MCP, metaxon
Product Names: Chiptox, Rhomene, Rhonox, Dow MCP Amine Weed Killer, Weedar Sodium MCPA, Brominal Plus, Weedar MCPA Concentrate, Weedone MCPA Ester, MCP Amine 4

MCPB
Common Name: MCPB
Product Names: Can-trol, Thistrol

mecoprop
Common Name: mecoprop, MCPP
Product Names: Iso-Cornox 64, Chipco Turf Herbicide, MCPP K-4 CMPP (obsolete)

metolachlor
Common Name: metolachlor
Product Names: Dual 8E, Bicep 4.5L, Milocep 5L

MSMA
Common Name: MSMA
Product Names: Ansar 170 H.C., Ansar 529 H.C., Arsonate Liquid, Bueno 6, Daconate 6, Dal-e-rad, Herb-all, Merge 823, Mesamate, Monate, Phyban H.C., Target MSMA, Trans-vert, Weed-e-rad, Weed-hoe

oryzalin
Common Name: oryzalin
Product Names: Ryzelan, Surflan, Dirimal

oxyfluorfen
Common Name: oxyflurofen
Product Names: Goal 2EC, Goal 25W, Goal 1G, Goal 2G

paraquat
Common Name: paraquat
Product Names: Gramoxone, Ortho Paraquat

PBA
Common Name: PBA
Product Names: Benzac 354, Zobar

picloram
Common Name: picloram
Product Names: Tordon Beads, Tordon K, Tordon 10K, Tordon 22K, Tordon 101, Tordon 101R, Tordon 155, Tordon 212, Amdon, Grazon

prometone
Common Name: prometone
Product Names: Pramitol 25E, Pramitol 5PS, Pramitol 80WP, Conquer, Gesafram, Primator, CO-OP Pramitol 25E, CO-OP Pramitol 5PS

radapon see dalapon

simazine
Common Name: simazine
Product Names: Prencep 80W, Princep 4L, Princep 4G, Aquazine 80W, Princep Caliber 90, Gesatop, Rimatol, Simazine 4G

silvex
Common Name: silvex, fenoprop, 2,4,5-TP
Product Names: Kudon, 3D Weedone (2,4-D, silvex & dicamba), Weedone Chickweed Killer, Weedone 2,4,5-TP, SILVI-RHAP LV-4TP

tebuthiuron
Common Name: tebuthiuron
Product Names: Graslan, Spike, Herbic, Perflan

TCA
Common Name: TCA
Product Names: Hopkins Sodium TCA Weed Killer Liquid, Hopkins Sodium TCA Granular Grass Weed Killer, Revenge

triclopyr
Common Name: triclopyr
Product Names: Garlon 3A, Garlon 4, Dowco 233

ureabor see bromacil